PALESTINE

Annual Report
of the
Department of Agriculture and Fisheries
for the year ended 31st March, 1938

by

M. T. DAWE, O.B.E., F.L.S.,

Director of Agriculture and Fisheries.

JERUSALEM

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ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE AND FISHERIES

FOR THE

YEAR ENDED 31ST MARCH, 1938.

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DEPARTMENT OF AGRICULTURE AND FISHERIES
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SECTION I.

AGRICULTURE AND FISHERIES.

GENERAL.

1937 was a good agricultural year. The rainfall was adequate and well-distributed with the result that harvests were well above the average. Excellent crops were obtained of wheat, barley, maize, sesame, durra, water melons, olives, tomatoes and potatoes. There were some exceptions, however, since heavy floods caused losses in the plains of Acre Sub-District and failure of the late rains in the eastern and southern parts of Beersheba necessitated the issue of loans to the Bedu. Rough hill-side grazing was good during the spring, and working and domestic stock were in good condition throughout the year. On the whole there were no serious losses of crops due to attacks of pests and diseases. Generally, farming in Jewish settlements continued to progress on modern lines, while there was a similar tendency for Arab farmers to carry out intensive cultivation as far as possible on their holdings. Citrus exports reached a new record of 11,415,490½ cases for the 1937/38 export season.

STAFF.

2. In October, 1937, Capt. F.R. Mason took up his duties as Deputy Director, on transfer from Malaya.

Mr. J.M. Smith, O.B.E., Chief Veterinary Officer, acted for the Director of Agriculture and Fisheries while the latter was on leave, from the 20th June to 28th October, 1937.

Mr. S.J. Gilbert, M.R.C.V.S., Senior Veterinary Research Officer, retired in September, 1937, and was succeeded by Mr. G.B. Simmins, M.R.C.V.S., D.S.M.

Mr. J.A. Craig, Agricultural Education and Research Officer, resigned from Government Service on the 16th June, 1937; the vacancy has not been filled for reasons of economy.

Mr. J.M. Taylor, Chief Fruit Inspector, resigned on the 11th February, 1938, and was succeeded by Mr. R.E. Hunter, B.Sc., on the 19th November, 1937.

PLANT PROTECTION.

3. The only serious damage to ground crops was due to *Syringopais temperatella* (Ed Duda). To combat this pest, the Department established 31 plots to demonstrate to farmers the benefits of ploughing up the stubble in summer, and changing the rotation by the introduction of a leguminous summer crop after and before the next cereal crop. Other diseases affecting fruit trees and vines are referred to in paragraph 6 and paragraphs 45—52.

PRODUCTION.

4. The yields of the main crops in 1937 compared with yields of the preceding crops in the previous three years, are shown in the following table :—

METRIC TONS.

	1934	1935	1936	1937
Wheat	85,171	104,353	76,059	127,420
Barley	70,308	68,905	55,169	75,417
Lentils	2,176	2,698	2,379	3,830
Kersanna	4,738	8,849	7,378	6,004
Beans	841	1,483	961	1,529
Peas	121	225	871	2,037
Durra	46,830	46,185	22,122	61,023
Sesame	2,658	6,914	1,847	9,817
Olives	6,647	45,092	15,755	47,247
Melons	36,447	68,799	81,835	102,859
Grapes	29,764	28,818	49,359	45,673
Tobacco	1,012	1,032	1,237	2,371
Vegetables	36,465	67,847	70,321	120,395

CITRUS.

5. Development of fresh areas for citrus growing has almost ceased. An additional area of only 1,500 dunums of citrus was planted during the year ended 31st March, 1938. The exports of citrus fruit during the last four years are shown below :—

Year	Oranges	Grapefruit	Lemons	Other Citrus Fruits	TOTAL
	Boxes	Boxes	Boxes	Boxes	Boxes
1934/35	6,507,995	791,661	30,058	1,312	7,330,846
1935/36	4,997,302	850,120	46,915	2,973	5,897,310
1936/37	9,166,903	1,542,046	70,792	10,368	10,790,110
1937/38	9,512,987	1,809,808½	80,779	11,916	11,415,490½

Wet weather conditions towards the end of the season were responsible for a certain amount of wastage in transit but the condition of fruit generally on arrival was much better than in the previous year. The United Kingdom took 60% (6,908,985 boxes) of the total exports. Exports to the Continent increased from 28% to 38% (4,318,416 boxes) of the total exports which was an increase of 1,326,411 boxes over those of the preceding year. The net profits to citrus growers have been estimated for the 1937/38 season as 1s. to 2s. per box for oranges, according to the age of the groves, but with little or no profit for grapefruit.

Road transport facilities for the export of the citrus crop were better than in the previous year, due mainly to the new coastal main route to Haifa port. There was some improvement in existing feeder roads and some new roads were constructed in the Sharon and new districts.

There were eleven sailings of refrigerated ships as compared with only one last year, the freight being 2s. 6d. per box.

Advertising of citrus fruits was carried out satisfactorily in the United Kingdom, in fifteen continental countries, in India, Canada, Palestine, Syria and the Hejaz and cost £P.36,845. Films and radio advertising were included for the first time. Some relief was accorded to the citrus industry by means of a reduction of the Rural Property Tax, exemption from customs duty on wooden hoops, and drawbacks on citrus box wood.

OTHER FRUITS.

6. All other fruits yielded well except bananas, almonds and apricots which suffered heavily from frost damage. Olive cultivation expanded satisfactorily.

Phylloxera spread, and efforts were continued to induce growers to substitute infected vines with plants grafted on American stocks, of which about 900,000 were raised in private nurseries in addition to the 100,000 vines raised in Government nurseries.

POTATOES.

7. Satisfactory progress continues to be made in the extended cultivation of this crop. Areas and harvests during the past six years are shown below :—

Year	Area under Cultivation	Yield
	Dunums	Metric Tons
1932	2,863	929
1933	3,835	974
1934	5,252	1,834
1935	6,142	2,850
1936	9,654	5,000
1937	9,454	9,536

Good yields were obtained from imported varieties from the United Kingdom. 600 tons of seed potatoes were imported by the Department from the United Kingdom and sold at cost price to farmers at about £P.8.200 mils per ton. Some 72 varietal and manurial plots of potatoes were laid down in different parts of the country. Up-to-Date is the best yielding variety followed by Arran Banner and Majestic. Royal Kidney is the best variety recommended for late summer and early autumn planting under irrigation. The Up-to-Date variety is liable to lose its popularity owing to its poor keeping qualities and susceptibility to disease.

MARKETS.

8. Wheat was firm the whole year round, averaging about £P.9.500 mils per ton for milling and £P.12 for seed grain.

Barley was fairly steady round about £P.6 to £P.6.500 mils per ton.

Prices of vegetables were low owing to big crops coming on to the market during relatively short harvesting seasons, while prices of eggs were exceptionally low owing to big imports from Syria free of customs duty.

OTHER VEGETABLES.

9. The markets were glutted with an abundant production of vegetables, while imports from Syria, without payment of customs duties under the Palestine-Syria Customs Agreement, depressed prices to such an extent that it was not uncommon for some crops, particularly tomatoes, to be left to rot in the fields as it did not pay to harvest them. Despite low prices, vegetable cultivation continues to increase satisfactorily, vide the following statement :—

	1933		1934		1935		1936		1937	
	Area	Tons	Area	Tons	Area	Tons	Area	Tons	Area	Tons
Tomatoes	29,566	7,471	31,654	11.201	32,246	17,286	43,254	19,027	45,819	34,907
Cucumbers	15,764	3,528	17,286	7,049	17,377	8,022	20,672	6,801	21,387	16,527
Potatoes	3,835	974	5,252	1,834	6.142	2,850	9,654	5,000	9,454	9,536
Cauliflowers							5,831	4,454	5,858	5,846
Cabbages							4,297	4,332	5,236	6,803
Onions							13,323	4,864	21,364	14,120
Egg-Plants							8,708	6,745	6,677	8,770
Marrows									10,238	7,509
Carrots									2,055	2,699
Other		9.332		16,381		39,689	40,132	19,098	23,432	13,678
Total		21,305		36,465		67,847	145,871	70,321	151,520	120,395

TOBACCO.

10. Although there was a heavy increase in the production of tobacco in 1937 (2,497,650 kgs.) prices fell, and it was necessary to introduce administrative measures in the following year, 1938, to restrict cultivation to a total of 30,000 dunums. In this way, it is hoped that the crop will not exceed much more than about 1,250,000 kgs. which is approximately sufficient to meet the country's requirements of local tobacco, since the quality of the local tobacco is not yet up to standard for export, having regard also to the high customs duties in importing countries. There is need for better organisation among the growers to improve the quality of

the leaf by using better seed, better curing and manipulation, and for centralised grading and baling. The problem of centralised grading, so as to obtain better prices for the leaf, is under consideration in consultation with the Department of Customs, Excise and Trade.

FORAGE.

11. The principal problem of the dairy industry is the cheaper production of forage. Successful trials with cowpeas and *Setaria* at the Jewish Agency Agricultural Research Station and by the Department have led to the more general cultivation of these summer fodder crops in the Jewish settlements. Arab stock-owners are also beginning to give their animals more feed and are realising the value of raising forage for sale. The work on the improvement of natural pastures which was hindered in 1936 by the disturbances, was resumed and a rotational grazing plot has been established in Beersheba. Australian grasses are also being tried out in various parts of the country.

LOANS FOR DEVELOPMENT IN THE HILLS.

12. During the year, the sum of £P.33,893 was approved as loans for farmers for development in the hills. Of this sum, £P.30,656 was actually disbursed to farmers. The following table shows how the loans were distributed throughout the country, mainly for the terracing and levelling of land on hill-sides, for the growing of fruit trees :—

Sub-District	Revised Allotment LP.	Loans passed for payment by Board	
		No. of Loans	Amount—LP.
Hebron	7,780	192	6,737
Tulkarm	5,000	20	1,765
Jenin	7,000	158	3,129
Nablus	8,000	88	2,522
Jerusalem	7,260	389	7,255
Ramallah	5,190	202	4,980
Galilee	6,585	61	4,425
Ramle	3,185	90	3,080
Total	50,000	1,200	33,893

The personnel of the Department of Agriculture co-operated in the preparation of schemes and advising villagers how to terrace their lands and what trees to plant. The fund was administered by a Loan Board under the chairmanship of the Director of Agriculture and Fisheries. Reports show that, with few exceptions, the loans have been properly utilised for the purposes for which they were given.

AGRICULTURAL MACHINERY.

13. The use of agricultural implements is on the increase in villages and settlements for both cultural and harvesting operations, vide the following table showing the imports of agricultural machinery and implements :—

Year	LP.
1933	61,273
1934	77,467
1935	100,935
1936	68,831
1937	63,918

MANURES AND FERTILIZERS.

14. The work at the experiment stations of the Department and the consequent propaganda resulted in the increased use of chemical fertilizers as shown in the following tables of imports of all kinds of manures and fertilizers :—

Year	LP.
1933	99,656
1934	109,208
1935	99,651
1936	82,401
1937	148,454

FISHERIES.

15. There was a slight increase in the catch and value of fish in 1937/38 as compared with the previous year, vide the following table :—

	1935/36		1936/37		1937/38	
	Tons	Value LP.	Tons	Value LP.	Tons	Value LP.
Sea-fish	1,640	55,204	1,285	35,405	1,395	52,057
Lake-fish	338	8,703	318	9,482	303	7,564
Total	1,978	63,907	1,603	44,887	1,698	59,621

The various methods of capture are described in detail in the report of the Chief Fisheries Officer (paragraph 253).

16. The catch of fish by foreign trawlers has declined while the catch of fish by local trawlers has increased. Certain conclusions as to long-line and trawl fishing grounds can now be made available, viz :—

(a) The long-line fishing grounds situated in 60 fathoms west of Ascalon are the most productive on the coast.

(b) The trawl fishing grounds of the south have proved markedly richer than those of the north.

17. More accurate statistics have now been obtained as to the number of fishing boats and fishermen viz :—

The total number of licensed fishermen amounts to	1,215
Fishermen employed under the exclusive licence granted to the Lake Hula Concessionaires number	15
Fishermen engaged in fishing in private waters	17
The crews of various foreign fishing vessels number	180
Shore labourers	200
Total	1,627

Besides the fishermen directly employed in the industry, there are 365 fish merchants, salesmen and hawkers. The total number of boats engaged in fishing amounts to 386 with a registered tonnage of 400 tons.

18. There is a continued increase in the import of fish, vide the following table :—

	1935/36		1936/37		1937/38	
	Tons	LP.	Tons	LP.	Tons	LP.
Fish in brine, dry, salted and smoked	1,773	39,025	1,933	42,116	2,082	46,030
Tinned fish	1,374	64,492	1,291	59,274	1,090	48,749
Fresh and frozen fish	1,774	65,727	1,589	66,565	1,953	77,095
Total	4,921	169,244	4,813	167,955	5,125	171,874

19. It is noteworthy that the quantity of fresh and frozen fish imported exceeded the quantity caught locally in 1937/38. The following table indicates the possibility of, and the need for, the further development of the local fisheries.

	1935/36		1936/37		1937/38	
	Tons	LP.	Tons	LP.	Tons	LP.
Fresh fish caught locally	1,978	63,907	1,603	44,887	1,698	59,621
Imports of fresh and frozen fish	1,774	65,727	1,589	66,565	1,953	77,065

20. The price of fish rose. This was due partly to the exceptional decline in the catch of of sardines which are cheap, and to the increase in the catch of fish of bigger size and better quality, owing to the successful results of the legislation introduced in the preceding year prescribing a larger size for the mesh of nets. The creation of wholesale fish markets would, it is believed, enable the fishermen to obtain a larger share of the gross return.

21. Action taken to develop the fisheries, and the experiments and research in progress, are detailed in the report of the Chief Fisheries Officer, (paras. 251—288), as also the progress made in the preparation and distribution of fishermen's charts.

ANIMAL HUSBANDRY.

22. *General Position of the Livestock Industry.* The main function of the Veterinary Service continued to be the prevention of introduction of animal contagious and infectious diseases from abroad and the development of the livestock industry. According to the animal enumeration in July, 1937, there were in the country :—

Cattle	175,000
Sheep	209,000
Goats	361,000
Horses	20,000
Mules	9,000
Donkeys	92,000
Camels	28,000
Poultry	2,600,000

There was an increase in all classes of livestock with the exception of a small decrease in goats and camels.

23. The country was generally free of epizootic diseases such as cattle-plague, bovine pleuro-pneumonia, and haemorrhagic septicaemia.

24. An outbreak of foot-and-mouth disease occurred in February, 1937, since when the disease has gradually spread throughout the country. It is hoped that the incidence will subside during the coming year and the disease disappear as a result of all cattle becoming immune.

25. Dipping of village sheep and goats against tick fevers was successfully continued with Government assistance, and legislation was introduced in June, 1937, for the regular dipping of sheep and goats in declared infected areas against payment of fees, but owing to the disturbed conditions effect has not yet been given to the provisions of the Rules.

26. Continued progress has been made in the control and eradication of bovine contagious abortion, rabies and dourine.

27. A test survey of the incidence of tuberculosis has shown that this disease is on the increase, but the financial situation precluded the introduction of a scheme of control and compensation.

28. Over 30,000 sheep and goats were successfully inoculated against anthrax.

29. More detailed information in regard to the preceding and other diseases is contained in the report of the Chief Veterinary Officer (paragraphs 174—209).

30. The quarantine of imported animals was maintained satisfactorily. Imports through quarantine stations increased from 320,000 in 1936/37 to 391,000 in 1937/38.

31. Poultry imports from overseas declined, however, from 1,835,000 in 1936/37 to 662,000 in 1937/38 due partly to the imposition of a duty of 25 mils per bird in April, 1937, and partly to an increase of local production and the depressed economic conditions.

32. The policy of the gradual upgrading of local stock throughout the country has been maintained. Animals from the villages were brought to the Government Stock Farm at Acre for service free of charge, while selected sires and high-class stud animals were sent to the districts

and issued on loan to the villages, Government supplying the forage, free of charge, in the poorer villages. Selected sires of all classes of stock were also sold to bona fide breeders at nominal prices, while premiums were paid to owners of selected village sires which were used for serving female stock of the respective villages.

33. The trial shipment of Karakul lamb skins to the United Kingdom in 1933 was repeated in 1937 with promising results. The consignment was valued by a London firm at 25 shillings for the best first-cross skin and 30 shillings for the best second-cross skin, with averages of 13 shillings and 21 shillings respectively.

34. Further details concerning the position of the livestock industry, especially dairying, pig raising, and animal-product industries such as tanneries, and sausage factories, are set out in the report of the Chief Veterinary Officer (paragraphs 237—250).

SECTION II.

WORK OF THE DEPARTMENT.

AGRICULTURAL EXPERIMENT STATIONS AND DEMONSTRATIONS.

35. No new areas were taken over during the year. Generally, the experimental and demonstrational work described in previous reports was continued, and efforts were concentrated on the multiplication of definite strains of cereals for distribution and propagation by farmers. In the Acre station, only one variety of wheat is now grown for multiplication, namely, Jaljuli. This is a very fine hard-grain bearded indigenous variety, pre-eminently suited to the coastal plain. At Farradiya, attention is concentrated on the propagation of the Haurani Heiti wheat. This is a club-headed wheat with a plump short grain, good length of culm with a white awn suitable for the hills and plains of Galilee. At Majdal, the Dibbiya is being propagated—an early-maturing and fairly drought-resistant indigenous variety for the south of Palestine. At Ein Arrub two popular drought-resistant varieties are being propagated for the Jerusalem-Hebron areas, namely Jaljuli and Haurani. At Beisan, the Mughrabi is being propagated. It is a tall-growing black-bearded wheat with a very long amber-coloured grain. Only two varieties of barley are being propagated at all stations (except Farradiya), namely, Mariouti and "4000", the former being especially suited to arid areas. At Farradiya station only the Hirawi is being propagated.

36. At all stations an endeavour is being made to secure an early-maturing variety of oats to permit of securing a more evenly-balanced ratio between the times of maturity of the oat and the vetch grown for hay. There were laid down 20 five-dunum plots of vetch and oats in each of the seven sub-districts of the north, 78 plots of vetch and oats, totalling 435 dunums in the Southern District, and 87 plots of oats and vetch in the Jerusalem District. In addition, there were laid down 26 plots covering 53 dunums for berseem and 24 plots covering 120 dunums for maize, 3 plots of 4½ dunums each of lucerne in the Southern District; and demonstration plots totalling 470 dunums for hay and green fodder in the Jerusalem District. In all cases seed and fertilizers were issued to farmers free of charge.

37. In addition to the work done at agricultural experiment stations, which is described in more detail in the enclosed report of the Chief Agricultural Officer, a good deal of demonstrational work was done in the districts in co-operation with farmers, the principal object being to issue to farmers selected grain from experiment stations (which is repaid in kind during the following harvest) so that the resulting crops may be distributed to other farmers in the following year in the neighbourhood. Thus, in Galilee, 14 farmers received selected grain to be grown on 50 dunums each, or altogether 700 dunums, of which 420 were under wheat and 280 under barley. In the Jerusalem District, similar arrangements were made in respect of 10 farmers covering an area of 615 dunums and in the Southern District, for 34 farmers covering an area of 400 dunums.

38. From all stations there were issued 1,000,000 vegetable seedlings, some 200 kilogrammes of vegetable seed gratis and 21 tons of grain for repayment in kind after the harvest.

HORTICULTURAL EXPERIMENT STATIONS AND DEMONSTRATION PLOTS.

39. Nine horticultural stations and the records thereat were maintained in good condition. Detailed guides to these stations have been prepared and already issued for Sarafand and Farradiya. New introductions and observations of interest are recorded in the report of the Chief Horticultural Officer (paragraphs 317—324).

40. The numbers of vines and fruit trees raised and issued are shown in the following table :—

	Number raised	Number distributed		Number left over	
		Sold	Free	Replanted	Destroyed
Vines	100,000	70,727	16,940	6,410	5,923
Fruit trees (mostly deciduous)	106,036	67,050	19,100	13,204	6,682

The relatively large number of trees left over which were not collected by applicants is attributed to the disturbed conditions in the country and adverse climatic conditions.

41. Work was continued in most of the 29 plots and interest was shown by the neighbouring villagers in the work done, particularly in pruning and spraying.

CITRUS FRUIT INSPECTION.

42. 215,189 boxes (or 1.9% of the total exports) were rejected after inspection, of which 171,001 boxes were repacked under the supervision of the fruit inspectors. The principal causes of rejection were mechanical injuries (35%), waste (13%), irregular sizing (8%), Nuqsans (8%), and fruit fly and red scale (5%).

43. The statistical services rendered to exporters have been extended during the year at the request of the Citrus Fruit Committee mention of which will be found in the report of the Chief Horticultural Officer (paragraph 305).

CONTROL OF PLANT NURSERIES.

44. 93 private nurseries were inspected, approved for registration and licensed in accordance with the Nursery Rules under the Plant Protection Ordinance.

INVESTIGATIONS, RESEARCH AND PLANT PROTECTION.

45. Funds were provided by amending the Citrus Fruit Advertisement Ordinance to enable the Citrus Fruit Advertising Fund to be used for any approved scheme designed to benefit the citrus industry. As a result, a scheme of research and investigation into the problems of wastage of citrus fruit exported from Palestine was undertaken, £P.3,167 being allocated for the purpose. The scheme was undertaken by the Agricultural Research Station of the Jewish Agency at Rehovot and the Department of Scientific and Industrial Research in England, and the data are now being analysed.

46. Studies to find resistance to nematodes have been commenced with stocks for stone fruits.

47. Studies in the cold storage of apples indicate that fruit from the hills shows generally better keeping qualities than that from the plains.

48. Four mounted officers of the Plant Protection Service visited outlying villages to collect information regarding insect or fungus troubles and to bring the information to the advisory officer of the area. These men are able to demonstrate the use of simple control methods and apply a kind of "first aid". This method of collecting intelligence as to the incidence of pests and diseases has been found to be useful and will be continued in the future. The chief pests against which control demonstrations were given were: grape berry moth (*Polychrosis botrana*), grape bud moth (*Theresia ampelophaga*), Mediterranean fruit fly (*Ceratitis capitata*), *Lymantria lapidicola*, *Hoplocampa* sp. and various vegetable pests, and aphis on tobacco, etc.

49. Grape-vines everywhere in the hills suffered heavily from mildew, and at the end of year *Puccinia graminis* was wide-spread in wheat and barley. This rust has done heavy damage to the wheat crop and at the time of writing, the 1938 yield, which was expected to be the best on record, will probably be reduced by half. The Plant Protection Service is continuing its investigations into vegetable pests and Mediterranean fruit fly in the hills and in Jericho .

50. *Eriosoma lanigerum* or "woolly aphis" which attacks apples, and *Aphelinus mali* its parasite are also under investigation.

51. The investigation into the control of *Capnodis* beetles by mechanical and chemical means was continued but the study of the root-stock problem in connection with *Capnodis* has had to be postponed owing to lack of funds.

52. At the Acre laboratory, research was continued on *Empoasca lybica*—the leaf-hopper of potatoes, *Agrotis* sp. and *Prodenia litura* on berseem and alfalfa. A cheap and effective remedy has been demonstrated to the fodder growers and is now becoming a standard practice. The bionomics of *Prodenia litura* are under investigation, also the control and seasonal occurrence of the Mediterranean fruit fly in the Emeq. Codling moth and its control which is the subject of investigation in the coastal plain will also be studied in the Emeq.

53. Grants-in-aid to the Jewish Agency and the Hebrew University for the purpose of carrying out research work on problems connected with agriculture and veterinary science were continued during the year under review. The amount of such grants totalled £P.6,930, of which total £P.6,550 were allocated to the Jewish Agency for research work at the Agricultural Research Station, Rehovot, and the remainder to the Hebrew University. At the Agricultural Research Station, Rehovot, part of the grant was used for research into problems directly connected with the citrus industry and included upkeep of citrus plantations for experimental purposes, the study of irrigation and fertilizer problems, studies of problems connected with the physiology and genetics of the citrus tree, variety tests, planting distances, the production of summer lemons, and investigations of the causes of citrus diseases and their control. A small grant was also made towards the upkeep of a plantation of grapefruit established at Geva, in the Plain of Jezreel, where soil conditions are so different to those obtaining in the main citrus belt. A further portion of the grant was used for the maintenance of two experimental farm units at the Hill-side Fruit Growing Station at Qiryat Anavim, where experiments and trials with deciduous fruits have been carried out for more than a decade. Other work carried out by the Jewish Agency Agricultural Research Station has included intensive farming experiments, field and garden crop trials and experiments, animal nutrition experiments, studies in rural economics, and plant pathological investigations (other than those on citrus referred to above). The Division of Plant Pathology at Rehovot has also maintained a mycological service for the benefit of farmers and settlers, as well as for the various Services of this Department which have required diagnosis and advice as to control of plant diseases.

54. The grant to the Hebrew University was for research into problems connected with the field mouse pest and *spirochaetosis* of poultry.

VETERINARY AND ANIMAL HUSBANDRY.

55. In the Veterinary Laboratory, over 40,000 specimens were received for diagnosis. 3,554 slides were microscopically examined.

56. At the Stock Farm, Acre, the quality of farm stock has been considerably improved and the present establishment now consists of 1,053 head as follows :—

Bulls	55
Cows	65
Bull-calves	15
Heifer-calves	11
Horses	18
Donkeys	33
Working mules	6
Sheep	482
Goats	330
Pigs	38
Total	1,053

57. Almost all modern poultry farms in the country are now stocked with the improved progeny from the Acre Poultry Farm. The following eggs for hatching and breeding stock were sold to farmers at nominal prices :—

Hatching eggs	51,760
Day-old chicks	5,109
Four- to six-week-old chicks	272
Breeding poultry	4,934
Rabbits	167
Bee swarms	449

58. Field officers continued their work to improve the methods of management of all classes of stock throughout the country. As a part of the policy of upgrading local stock there were maintained at the Acre Stock Farm 180 stud sires (12 bulls, 5 stallions, 4 jackasses, 37 rams, 57 billy-goats and 3 boars). 56 selected sires were distributed for service in the districts and it is estimated that some 2,500 village cows were served by Government bulls and 399 pedigree animals were sold to breeders at nominal prices.

59. Details of the above services and sales, and particulars concerning the different kinds of breeds of cattle (Lebanese, Kerry and Guernsey), Arab horses, West Highland horses, Awasi sheep, Karakul sheep, Mamber goats, Damascus goats and pigs are given in the report of the Chief Veterinary Officer, (paragraphs 215—233).

60. Feeding experiments with carobs have shown that they are as valuable as barley, if not more valuable.

61. Two refresher courses of one week's duration each were organised and attended by 100 students for instruction in the theory and practice of poultry and beekeeping and 40 students attended a three-months course at Acre in the practical management of livestock, poultry and bees.

AGRICULTURAL EDUCATION.

62. Co-operation between officers of the Department of Agriculture and the Department of Education has continued especially in relation to the work in school gardens. Fruit trees, vegetable seeds and seedlings, tools and fertilizers, to the value of over £P.100 were issued to Arab and Jewish school gardens where particular attention is being given to vegetable growing. In addition, animal husbandry is encouraged by the issue from the Veterinary Service, free of charge, of poultry, rabbits and bees for demonstrational purposes.

63. The monthly publication of the Agricultural Supplement to the Palestine Gazette has been continued throughout the year, and has met with a good deal of appreciation by the farmers and settlers who are unable to benefit from the more technical information published in agricultural journals and research station bulletins, most of which are published in Hebrew and English only.

64. Talks to farmers have been compiled by various officers of the Department, and broadcast from the Jerusalem studio of the Palestine Broadcasting Service, regularly each week in Arabic and Hebrew. The subject matter of the "talks" has been made more topical and the style of delivery has been popularised with a view to arousing and maintaining the interest of listeners in addition to imparting instruction. It has been found that the form of "talk" which is most popular is that given by two officers, or one officer and a farmer, in the form of of a "dialogue". Most of the talks are subsequently printed in Arabic and Hebrew, and distributed to farmers and others interested in agriculture, together with the monthly Agricultural Supplement. Arrangements have been made to secure the advice of the Agricultural Education Committee of the General Agricultural Council and the Department of Education in compiling the subjects for the weekly talks during the year 1938/39.

KADOORIE AGRICULTURAL SCHOOL, TULKARM.

65. The school remained closed as a result of the generally unsettled conditions of the country until 20th October, 1937. During this period opportunity was taken to reorganise the staff and curriculum with the object of ensuring that the training offered should be of the greatest value to the students during their two-year course.

Staff.

66. The teaching staff, at the time the school reopened comprised a new Principal, Mr. W.K. Hubble, who was appointed in February, 1937, a Vice Principal—a new appointment as the result of reorganisation—a Stockman, an Instructor in Horticulture and a Science Master. A House Steward was appointed to replace the previous post of Matron. Instruction in poultry and beekeeping has been given by an officer of the Agricultural Service who has visited the school regularly for this purpose.

School Register.

67. Forty-eight students returned to the school, when it reopened in October, 1937, out of the 60 who were dismissed as a result of the strike in April, 1936. Of these 48, twenty-five were given one term's instruction to enable them to complete the course which they had nearly finished when the school was closed; all 25 students were successful in obtaining the necessary pass marks and left the school early in January, 1938. The remaining twenty-three continued their studies up to the end of the year under review and will complete three terms before taking their final examination. Twenty-eight new students were admitted to the school at the commencement of the spring term which began on 17th January, 1938. It is hoped that most of these students will complete their first year's training by the end of the summer term in July, 1938, and thus pass into the second year class at the beginning of October, 1938, when a further batch of new students will be admitted so reverting to the normal school year which commences in October and ends in July.

Training.

68. Greater attention is now being given to such subjects as vegetable production, poultry and beekeeping, and horticulture. During the first year of the course, the student receives a thorough grounding in the science connected with agriculture and this part of the course has been made more comprehensive and more efficient by the appointment of a Science Master with agricultural training. In the second year, the student goes on to receive further training in the production of crops and the management of stock and is thus able to understand how the scientific principles which he has learnt during his first year may be applied in practice.

69. The system of practical work for the students has been altered slightly to allow for more continous concentration by every student on each particular section of the farm, and practical work is so arranged that every student actually takes part in the work going on in each section of the farm at all times of the year. In addition, the subjects being taught in the classroom are scheduled, as far as possible, to coincide with the seasonal work on the farm. The students have assisted in the work of terracing and planting the Government Forest Reserve at Ras Amer under the supervision of an officer of the Forestry Department.

70. The importance of poultry rearing is becoming more and more evident and in consequence, further developments have been undertaken in this section of the school farm, particularly in the demonstration of different systems of housing and a general increase in the head of stock kept; special attention being paid to the local, or Baladi, breed of fowl.

71. The total cost of maintaining the school and farm throughout the year amounted to £P.7,466 which includes staff salaries representing £P.2,752. Revenue, excluding the value of farm produce consumed in the school, amounted to £P.1,698 of which £P.960 was derived from school fees.

72. Since the reopening of the school, the students have shown every desire to make the best use of their time, while the numerous applications which have been received from prospective candidates indicate the importance which is attached to the two-year course by farmers and land owners, for the further training and educating of their sons.

KADOORIE AGRICULTURAL SCHOOL, MOUNT TABOR.

73. This school remained open throughout the year and except for a certain feeling of isolation due to the disturbed conditions prevailing in that part of the country, work has progressed satisfactorily.

Staff.

74. A new Principal, Mr. N. I. Fiat, was appointed in June, 1937, vice Mr. S. Zemach. During the same month the Poultry and Beekeeping Instructor resigned, his duties being taken over by the new Principal. The staff during the greater part of the year, therefore, comprised the Principal, an Agricultural Lecturer and Farm Manager, a Science Master, a Stockman, and a Lecturer on Horticulture.

School Register.

75. The second-year class, numbering 21 students, completed its studies on August 20th, 1937. On 20th October, 1937, the new school year commenced with 15 students in the second-year class and 30 in the first-year class; during the year four of these 30 left the school, 3 due to poor health and one on account of lack of funds to pay the required school fees.

Training.

76. A slightly modified syllabus was prepared in August, 1937, to enable students to attend classes one half of the day and do practical work on the farm during the other half of the day. In this way it was possible to arrange for practically all the farm work to be carried out by students under the supervision of the instructors. Excursions were made by parties of students to the Government Stock Farm, Acre, to the Agricultural Research Station, Rehovot, and to certain rural institutions in Egypt. These excursions proved to be of great educational value to the students.

77. Most of the students who graduated in August have taken up agriculture as a profession. Seven have formed a co-operative farm. Fifteen work on the farms of their parents, nine are employed on private farms, three work as gardeners in towns, four are specialising in agriculture at foreign universities and one is employed in the Department of Agriculture and Fisheries.

78. Work on the various sections of the farm has progressed satisfactorily throughout the year. Some 500 dunums are devoted to field crops such as hay, wheat, barley and maize for silage. The water supply for irrigated crops has been very limited and development of this branch of the farm depends much on any increase in the water supply which can be obtained. The summer vegetable garden covered an area of 4 dunums, and the winter vegetable garden 8 dunums. 8 dunums of oaks and 30 dunums of assorted trees were planted, in all 3,665 trees. An area of 64 dunums, comprising an orchard and a vineyard, was satisfactorily maintained throughout the year. An irrigation system was installed in the vineyard. In the cannery, considerable quantities of home-grown vegetables and fruits were canned or pickled including cucumbers, tomatoes, grape juice, citrus and grape jams and a large quantity of olives. The dairy herd was satisfactorily maintained throughout the year. There was an average of 22 cows in milk during the year and the average number of heads of stock, including heifers, calves and one bull, was 40. In the dairy, cream, butter, cheese and "leben" were prepared. The average number of sheep in the flock during the year was 132. The poultry section was well-maintained with an average of 301 laying hens (White Leghorns, Rhode Island Reds, and local (Baladi) breeds). The average per laying bird for the year was 147 eggs. There are now 30 colonies of bees which are well-populated and doing well. Hornets have been the greatest pest of the apiary.

79. The total cost of maintaining the school and the farm throughout the year amounted to £P.8,600 which includes staff salaries representing £P.2,260. Revenue for the year was £P.2,238 of which £P.1,195 were farm receipts and £P.1,042 school fees.

80. Health was in general satisfactory. Towards the end of 1937 medical treatment was taken over by the Central Hospital of the Qupat Holim, Affula, and a new Matron, who is a graduate nurse, was appointed to the school in November.

GENERAL AGRICULTURAL COUNCIL.

81. The Agricultural Council and its ten committees numbering in all 159 members again co-operated with Government in various matters.

82. The Citrus Fruit Committee assisted the Fruit Inspection Service in the examination and revision of the rules under the Citrus Fruit Export Ordinance and in matters generally connected with the citrus trade.

83. Considerable time was devoted to measures for the fiscal protection and expansion of vegetable growing particularly potatoes, onions, cucumbers and carrots; but it was considered undersirable to increase the duties further on these vegetables until the Palestine-Syria Customs Agreement of 1929 can be amended so as to enable the collection of customs duties on produce of Syrian and Lebanese origin.

84. The periods during which the higher duties on eggs and potatoes are in force were extended, on the advice of the council; a sub-committee of the council completed its study of the economics of the dairy industry. These and other matters are referred to in more detail in the attached report of the Secretary of the General Agricultural Council (paragraphs 350—370).

SECTION III.

FINANCE.

REVENUE AND EXPENDITURE.

85. The expenditure of the Department has increased from £P.40,678 in 1921 to £P.192,649 in 1937/38. The following table shows the expenditure on the principal services during the past two years.

EXPENDITURE	1936/37 £P.	1937/38 £P.
Administration, Clerical, Accounts and Stores	13,584	14,153
Veterinary, including Quarantine, Hospital, Contagious Diseases, Laboratory Services and Attendance to Police Animals	28,591	29,007
Agricultural Field Service, including Experiments and Demonstrations.	25,701	23,628
Horticulture, Citrus Research and Fruit Inspection	34,911	38,387
Advertising of Citrus Fruits (including wastage research for 1937/38)	34,325	39,864
Animal Husbandry	14,058	16,936
Plant Protection, including Plant Inspection at Ports of Entry	8,688	10,125
Kadoorie Agricultural Schools at Mount Tabor and Tulkarm	13,697	15,128
Fisheries Service	2,034	4,306
Upkeep of Government House Grounds	1,117	1,115
Total	176,706	192,649

86. The revenue collected by the Department has increased from £P.4,226 in 1921 to £P.93,732 in 1937/38. The principal sources of revenue for the past two years are shown in the following table:—

REVENUE	1936/37 £P.	1937/38 £P.
Animal Quarantine Fees and Veterinary Receipts	22,370	19,133
Fruit Inspection Fees	15,787	18,782
Citrus Advertising Fees	34,199	41,048
Sale of Agricultural and Horticultural Produce	3,919	2,825
Stock Farm Receipts	3,271	3,285
Plant Fumigation Fees	803	850
Kadoorie Agricultural Schools	4,814	7,336
Fisheries Licences		473
Total	85,163	93,732

87. Satisfactory liaison and co-operation with the research and experiment stations of the Jewish Agency continued to be maintained. To assist the Jewish Agency in its research work, the results of which will be made available to the country as a whole, grants-in-aid were made during 1937/38 for the following purposes:—

	£P.
Citrus Research	3,000
Grant for Experimental Fruit Growing at Hill-side Station, Qiryat Anavim	300
Grant for Intensive Farming Experiments	300
Grant for Field and Garden Experiments	1,200
Grant for Animal Nutrition	500
Grant for Mycological Investigations	350
Grant for Irrigated Fruit Tree Experiments at Geva'	200
Grant for Non-irrigated Fruit Tree Experiments at Gvat	300
Grant for Studies in Rural Economics	400
Grants to the Hebrew University:—	
For Spirochaetosis Research	180
For Field Mice Investigations	200
Total	6,930

SECTION IV.

LEGISLATION.

EGGS.

88. On 29th December, 1937, the higher customs duty of one mil per egg which was in force during the period February to June was extended by two months to the period December to June inclusive. This is designed to give further protection to the local poultry industry.

POTATOES.

89. An order was promulgated on the 20th April, 1937, under the Plant Protection Ordinance, requiring that as from 22nd June, 1937, all potatoes imported from Syria ,except in sealed bags, via certain land routes, must enter Palestine by sea routes only. This was done in order that potatoes may be properly inspected against potato tuber moth.

The higher customs duty of £P.3 per ton on potatoes was also extended from 15th July to 31st August. (This higher duty is now in force from 1st April to 31st August).

FRUIT EXPORT ORDINANCE.

90. The Citrus Export Rules were revised on 20th August, 1937. The chief provisions thereof are detailed in paragraph 304.

ANIMAL DISEASES.

91. Rules made under the Animal Diseases Ordinance, during the year are set out in Appendix No. 6 to the report of the Chief Veterinary Officer.

FISHERIES.

92. Rules published regarding the kinds of nets to be used at Lake Tiberias, and exclusive fishing licences for Lake Hula and sponge fishing are set out in Table 8 to the report of the Chief Fisheries Officer.

CITRUS SHIPPING LEGISLATION.

93. Draft legislation was recommended by the Citrus Transportation and Marketing Committee and General Agricultural Council, prescribing minimum standards for ships carrying citrus fruit from Palestine. These proposals are still under consideration by Government.

DRAFT FERTILIZER ORDINANCE.

94. A draft Fertilizer Ordinance was published in the Gazette on 10th April, 1938, on the recommendation of the Agricultural Chemists Committee of the General Agricultural Council. It is designed to protect purchasers of fertilizers against adulteration.

95. Once again, I am glad to place on record my thanks to the staff of the Department for the loyal support and assistance they have rendered, under most difficult circumstances. I likewise place on record my appreciation of the valued co-operation and advice of the members of the General Agricultural Council and the committees and sub-committees thereof.

M. T. DAWE,
Director of Agriculture and Fisheries.

1st June, 1938.

REPORT OF THE CHIEF AGRICULTURAL OFFICER

FOR THE

YEAR 1ST APRIL, 1937, TO 31ST MARCH, 1938.

INTRODUCTORY.

96. The conditions of drought experienced in 1936 were fortunately not repeated in 1937, and it is possible to describe the year as having been a distinctly good one for the agricultural community. The generally good harvest of cereals and hay crops reaped in Palestine in 1937 was primarily due not to the quantity of rain which fell but to its good distribution. To the quantity which fell in winter coupled with a good fall in early spring can be attributed the further success of the summer crops. The heavy rains were however only a mixed blessing as considerable damage was done to cereals by flooding on the low-lying areas in the plains of Acre.

97. Yields from cereal, forage and vegetable crops were on the whole much above the average over the greater portion of the country, with a fair though not a good return from leguminous crops. Heavy crops of potatoes grown from seed imported from the United Kingdom were the rule, yields being up to high English standards. Crops of maize, sesame and durra from all sub-districts gave the highest returns recorded for some time past. The olive crop was the heaviest picked for some years and berries contained a high percentage of oil.

98. There were, however, exceptions in some sub-districts to the generally excellent winter crops. On the plains of the Acre Sub-District, heavy flooding caused a loss. In the central regions of the Judean hills cold dry conditions in the spring kept cereals backward, and although early in the season there were excellent prospects of heavy yields in the eastern and southern parts of Beersheba, late rains failed to appear. The water-melon crop, one of considerable importance to the country, was a heavy one.

99. The season opened satisfactorily with soaking rains in November, 1936, and well distributed rainfall throughout the winter culminated in a good spring rain, assuring the safety of the durra, sesame, maize and water-melon crops.

100. In a few instances applications for the remission of the rural property tax were considered, and it became necessary to issue a loan to Bedu in the southerly region of Beersheba towards the close of the year. Abnormally heavy floods had caused appreciable damage, accompanied by loss of life, to property and stored grain.

101. Although the grain harvest of 1936 had not been high there was at no time any shortage of "tibn" during 1937. Rough hill-side grazing was moderately good during the spring and combined with feed from the heavy stubbles, working and domestic stock have been in good condition throughout the year.

102. Happily the agricultural community was spared the depredations of endemic diseases in field crops in any extensive form save the annual attack of *Syringopais temperatella*, the effect of which was nullified by the good rainfall.

103. The summer of 1937 was one of the coolest experienced for some years and the absence of hot easterly winds until mid-October, when little or no damage could be done, was an outstanding feature. Early general rains at the end of October and beginning of November permitted only a comparatively small area to be sown "Afir" (dry sowing), more especially on the plains. The cereals sown in this manner, showed an excellent germination and the temperate climate conditions and the well-distributed rains of November gave farmers every opportunity of turning over their cereal and leguminous crop land under ideal conditions. The presence of these early rains, followed by temperate autumn weather, has given the finest winter grazing seen for many years.

104. Although the season opened so favourably, a prolonged period of drought lasting from mid-December, 1937, until January 14th, 1938, caused the loss of many thousands of dunums especially in the Hebron and Beersheba Sub-Districts. Later sowings were kept

backward by heavy and continued rains and cold weather. A heavy and wide-spread attack of *Syringopais temperatella* added to the discomforture of farmers. Until mid-March, the outlook for the current season was not promising, but more element conditions in March caused rapid growth and better prospects. Unfortunately, a bumper wheat crop was heavily attacked in certain parts of the country in April-May, reducing the anticipated yield by about a half.

105. The cultivation of potatoes continues to expand. The estimated area of 18,000 dunums, as given for the year 1936 was not reached but approached a figure of 12,000 which area it is anticipated will be reached during the present planting season.

106. While agriculture in Jewish settlements has continued to progress on modern lines, there is every indication that the Arab farmers are intensifying their holdings as far as is possible and making every effort to increase the production from their small farms.

107. A glut of vegetables on the market throughout the year played havoc with prices which did not commence to improve until October. Imports continue to come in from Syria and have had a decided influence on prices, deflating them to such an extent that it was no uncommon sight to see gardeners leaving crops particularly tomatoes unharvested.

108. The use of better agricultural implements both for cultural and harvest operations continues to progress in Arab villages. That the official agricultural stations and demonstration plots have served a very useful purpose is reflected in the extended purchases of chemical fertilizers, the use of better agricultural implements and a desire to utilise any water resources available for the production of vegetables, berseem and lucerne.

109. The appreciation of imported varieties of vegetables by Arab farmers is seen in the heavy demand for seed and seedlings from agricultural stations. During the year well over 1.000,000 seedlings and some 200-250 kilogrammes of seed have been distributed gratis.

110. From agricultural stations a total of 76 tons of cereals and 14 tons of leguminous grain was reaped, part of which was used for sowing at the stations and co-operative village plots and the rest was either sold for cash or issued on deferred payment in kind.

111. Work in connection with the improvement of natural pastures, hindered in 1936, is being resumed and a rotational grazing plot in the Beersheba area has been established. A quantity of imported grasses from Australia are being tried out both here and in the northern areas which are favoured with a higher rainfall.

WORK OF DISTRICT FIELD OFFICERS.

112. The organization of districts as regards the Department of Agriculture was changed during the year to give a more equable distribution of sub-districts to senior district officers. The Agricultural Officer, Northern District, relinquishing control of Nablus Sub-District to the Agricultural Officer, Jerusalem, and Tulkarm Sub-District to the Agricultural Officer, Southern District ,who in turn handed over Beersheba to the Agricultural Officer, Jerusalem. The position is now that the Agricultural Officer, Haifa, has seven sub-districts, the Agricultural Officer, Southern District, five but very large ones, including the Jewish colonies on the coastal plain and the Agricultural Officer, Jerusalem District, has four, including Beersheba, and Jericho.

113. In addition to their normal duties of the collection and arrangement of statistics, supervision of demonstration and extension work, and the dissemination of agricultural propaganda, the field staff have had the extra burden of the examination of applications for loans on the £P.50,000 Hill Loan Scheme. The inspection of the work done on small holdings with the initial instalments, was in itself no light task.

114. Two officers were given extra training at agricultural stations.

EXTENSION AND CO-OPERATIVE WORK OF THE SERVICE.

115. Though touring of field officers both of the first and second division has had to be appreciably curtailed by the disturbed state of the country and the necessity for economy, every effort has been made to maintain contact with the farming community. Extension work in villages inaugurated in previous years has been maintained as far as is possible.

116. Co-operative work in sub-districts embraces foremostly co-operative seed farms, which are in reality private multiplication stations, to the owners of which a supply of graded selected seed grain is either sold, or given in return for an equal quantity after harvest. Selected farmers to whom this seed is distributed are under guarantee to sell, under the auspices of the field staff, the results of this grain to others in their own particular district, village or settlement.

117. The quantity given in the northern districts was sufficient to supply two farmers in each of the seven sub-districts for sowing 50 dunum plots. Hitherto the areas of seed farms had been larger but under care of fewer co-operators. It is anticipated that there will be a more equable and rapid distribution of good type of grain by the new scheme. In the above districts fourteen farms covered an area of 700 dunums of which 420 were under wheat and 280 under barley.

118. In the Jerusalem District the distribution was made on an almost similar basis, but in some cases the individual areas were larger. Ten farms were in operation covering an area of 615 dunums. In the Southern District 34 farmers co-operated with us over an area of 400 dunums. Additionally sufficient quantities of chemical fertilizers were given gratis for half the area. This scheme served as a demonstration on fairly extensive lines, and it is worthy of note that due to the good season the differences in the unfertilized and fertilized plots results were so significant and apparent as materially to affect the purchases of fertilizers during the current season. It is worthy of note here that the value of imports of fertilizers for 1937 was £P.143,454 as against £P.82,401 in 1936.

119. During the period under review wheat to the amount of 12 tons 790 kgs. was distributed for repayment after harvest, and 33 tons 791 kgs. sold. Similarly 7 tons 620 kgs. of barley were distributed for repayment and 17 tons 582 kgs. sold. In addition 4 tons 310 kgs. of wheat, 140 kgs. of barley and about 34 tons of leguminous and miscellaneous seed, being either the stations' produce or locally-purchased, were distributed gratis as a measure to encourage hay production.

FORAGE.

120. The problem facing dairymen especially on the coastal plain and the Emeq, from where the large supplies of milk are drawn for the Jewish urban population, is the cheap production of forage. The high cost of milk is due entirely to the high cost of forage production, grown in the main under pumped irrigation. Berseem from September to May—lucerne from May to September is largely cultivated. Cowpeas and green maize are the other two foodstuffs commonly grown.

121. Exhaustive trials with cowpeas and *Setaria* had been conducted in some settlements under the auspices of the Agricultural Research Station of the Jewish Agency at Rehovot and at Government stations. The successful results of all these trials have led to the general adoption of these summer fodders by the settlements. In connection with this work co-operative experiments on an extensive scale have been inaugurated in a chain of settlements from the Jordan Valley to the central coastal plains. The trials embrace duties of water, fertilizer and cultivation trials, rates and dates of sowing. Seed, fertilizers, and water gauges are supplied by the Agricultural Service. Additionally imported grasses having been issued are grown under irrigation and trials with feeding in situ and cut forage are being closely compared as to their nutritive value and longevity. These trials have the objective of the establishment of permanent pasture fields under irrigation.

122. By no means less important co-operative demonstration work has been the continuance and intensification of our efforts to induce the Arab cultivator to increase his forage production. For his own working stock good feeding does not figure largely in the fellah's farming, but gradually he is giving his animals food other than crushed straw and a little grain, and definitely realising the value of raising forage for a ready sale.

123. In the northern areas, more progressive farmers have put down as large an area under a vetch-oat mixture as 250 dunums. As regards demonstrations there were twenty plots of five dunums each sown to vetch and oats in each of the seven sub-districts. Gratifying yields averaging ¾ of a ton per dunum or 2½ tons per acre of dry forage will, it is hoped, cause a voluntary expansion.

124. In the Southern District, where climatic, soil and water conditions obtaining are ideal for the rapid production of green fodder, 78 plots of vetch and oats covering an area of 435

dunums were put down, of which 67 were in Arab villages. Additionally 26 plots covering an area of 53 dunums were sown to berseem, 24 plots over an area of 120 dunums of maize and 3 plots of 4½ dunums each to lucerne. All seed and fertilizers for the above were issued gratis. In the Jerusalem District 87 plots of oat and vetch, and wheat and vetch mixture covering an area of 470 dunums have been sown as for hay and green fodder.

125. A comparatively large and important dairying industry in the villages surrounding the city is handicapped through the greater part of the year by lack of green and conserved forage. Conserved and green forage for the Jewish dairy farms has to be transported from other districts on the plain. Concentrates are used largely by Arab dairymen. This state of affairs is not due altogether to their unwillingness to grow forage, but rather from shortage of cultivable land in the hill areas and lack of irrigation.

126. Another feature of our co-operative work is the continued attack against the pest *Syringopais temperatella*. During the period under review the attack was perhaps the most severe and wide-spread seen for many years. The period of drought in December, 1937, saw crops attacked in areas where the pest had never been prevalent before and with the excessive cold and wet in January and February when growth was at a standstill the pest in many instances penetrated so far in the leaf that when warmer weather and consequently better growing conditions did come, many crops did not recover. Approved methods employed on demonstration plots of which 31 are established in various parts of the country are (a) ploughing of stubbles in summer and (b) change of rotation giving a leguminous and summer crop after and before the next cereal. Unfortunately such demonstrations have not been well received by farmers, as they object to increase the growth of leguminous or summer crops at the expense of a cereal crop. They have not the power to plough their stubble lands in summer, and as regards rotation again due to the Musha' system of land tenure (undivided shares). Notwithstanding their unwillingness to acquiesce in instructions, demonstration work proceeds. Subsidies are given co-operators to hire power to plough in summer, and seed and fertilizers are then given.

127. A feature of the year's work has been the enthusiasm of both settler and fellah alike to increase the production of potatoes. For several years the Department has imported seed for sale at cost price. The 600 tons brought from the United Kingodm this season has eclipsed all previous importations and were readily sold at £P.8.200 mils per ton. Other departmental activities consist of co-operative varietal and manurial tests or rather demonstrations throughout the country. These are restricted in the main to farmers who have not done any potato growing. Of these plots twenty-six are distributed over the Southern, 28 in Jerusalem District, and 18 in the North.

128. The main crop of the country is the early and late winter-sown according to climatic condition of the particular region, and contributes at least 85% of the total area under potatoes. An appreciable increase in the late summer- or autumn-sown crop is noted, and has been given a decided impetus by the success attending the export of trial lots of new potatoes to the United Kingdom.

129. As regards varieties Up-to-Date has not yet been beaten as a prolific yielder from winter-sown crops, but Arran Banner has been a very close second. Majestic has given good results and Royal Kidney appears to be a very suitable variety for late summer and early autumn planting under irrigation. It is expected that, due to its poor keeping qualities and liability to disease, Up-to-Date will lose its popularity. The area under the crop is annually increasing and late summer, autumn, and winter and very early spring sowings amounted to about 14,000 dunums for the season under review. It is difficult with the overlapping of seasons to compute the yield for the country, as the average is lowered by poor hill crops, but it can, at a conservative estimate, be put at 1½ to 2 tons per dunum. Heavy crops of as much as 4½ tons per dunum or 17 tons per acre have been lifted.

130. Continued progress in general cultivation of vegetables is evident throughout the country. Demands for seed and seedlings continue to be met from agricultural stations as far as is passible. While not altogether discontinuing the growing of Baladi or local sorts, imported varieties in demand on markets, have given an impetus to the Arab market-gardener to put an appreciable part of his garden under better types.

131. The area under tomatoes has increased considerably and as for potatoes, success has met trial shipments to the United Kingdom.

132. A comprehensive scheme embracing varietal, fertilizer, and irrigation and cultural demonstration combined with experimental work has been inaugurated over a chain of Jewish settlements from the Jordan Valley in the north, to the coastal plain in the south. Seed, fertilizers and some apparatus is supplied; settlers doing the work and tabulating results.

133. Steady progress in the packing, grading and marketing of vegetables is observed. Imports from neighbouring countries are not conducive to keeping prices at a fair level, but a drop in quantities coming in from Syria and Egypt is apparent.

134. Every endeavour, through the medium of school gardens, is made to further the progress of vegetable growing. Seed, seedlings, tools, and fertilizers to the value of over £P.100 were issued to Jewish and Arab schools.

MARKETS.

135. A review of the prices of staple agricultural commodities shows but little changes with one exception other than seasonal fluctuation. The generally good harvest of 1937 saw the market glutted with vegetables throughout the year. A very heavy yield of winter-sown potatoes fetched the price down from £P.8 per ton in May to £P.4.800 a ton in June. Wheat was firm throughout the year at from £P.9.500 to £P.12 a ton for milling and seed grain respectively. Barley which in the late winter of 1936/37 was changing hands at as high as £P.8 a ton, never rose above £P.6.500 during the period under review, and only in July, did it go beyond that price.

AGRICULTURAL STATIONS.

136. Moderately good yields of all crops were reaped from all stations. No new areas were taken over during the year. No material alterations have occurred at any stations in the type of work carried out. The Acre station remains the principal one as far as the main experimental work is concerned. At Majdal to a lesser degree and principally with field crops, experimental cultural practices rather than breeding work is carried on. Some interesting results from vegtable trials have been obtained.

137. The work at Ein Arrub and Farradiya is to a great extent demonstration, and these areas are used principally for multiplication of selected grain for distribution to farmers. The stations at Beisan and Jericho are utilised for irrigation investigations, the former for field crops and vegetables while at Jericho vegetables take up practically the whole area. At all stations except Farradiya and Ein Arrub special sections are set aside for the production of vegetable seed and seedlings.

WHEAT.

138. At Acre station, apart from the varietal section where after a process of elimination the most productive and disease-resistant strains are being produced, multiplication is confined to one variety, Jaljuli. A very fine hard-grained bearded indigenous variety, this is pre-eminently suited to the lands of the coastal plain. By careful selection the size, the colour and weight of grain, and stand of straw have been materially improved.

139. At Farradiya station only Haurani Heiti is grown. A club-head wheat with a plump short grain, good length of culm, with a white awn, it is distributed in the hills and plains of Galilee, where it is the most popular variety.

140. At Majdal station efforts are concentrated on the production of another early-maturing and fairly drought-resistant indigenous variety, Dibbiya. The principal object in view is to endeavour to find a very early-maturing strain for the Beersheba district which will be so advanced as to be able to give a yield without dependence on the latter rains, which so rarely arrive. In this connection considerable attention is given to soft-grained bearded hybrids. The state of the Dibbiya crops at the close of period to which this report refers was the finest in the region if not in the country and promised an average yield of 24-26 bushels per acre but unfortunately a very severe attack of rust in April has made the crop not worth the reaping. For 1937 the crop yielded the good figure of 140 kgs. per dunum. The hybrids were mature prior to the onset of the attack.

141. At Ein Arrub, the wheat crop is divided between Jaljuli and Haurani. Both have shown drought resistance. From the 1937 harvest the Haurani and Jaljuli gave a return of 81 and 100 kgs. per dunum respectively. Both these varieties are very popular in the Jerusalem District.

142. At the irrigation station of Beisan in the Jordan Valley a variety Mughrabi is grown exclusively. It is a tall-growing black-bearded wheat, popular in the area with a very long amber-coloured grain. Yields from this humus soil are as heavy as the stand is high, and 30 to 35 bushels from a crop standing well over six feet in height are common.

BARLEY.

143. The crops at all agricultural stations as for the remainder of the country will be surprisingly good. At all stations with the exception of Farradiya where Hirawi is grown exclusively, two varieties are produced with very little difference to be recorded as regards yielders. These are Mariouti and "4000", the former being especially suited to the more arid areas. An early crop of "4000" reaped at Acre station from 30 dunums in early March, 1938, gave the record yield of 10 tons of grain without irrigation.

OATS.

144. There is not as yet a very wide distribution of the crop. Principally grown in Jewish settlements, it is fast becoming one of their main crops for use as a part of the hay mixture. At stations, great attention is being paid to the crop in an endeavour to secure an early-maturing variety to permit of securing a more evenly-balanced ratio between the time of maturity of the oat and the vetch. The two principal varieties distributed from the stations, Red Texas and Kanotta, are not sufficiently early-ripening to meet requirements.Two Australian varieties Mulga and Buddah have shown for two past years the necessary qualities. At the close of March, 1938, these two varieties showed a stand of over 6 feet and it is confidently expected to reap 40 bushels per acre from them. They were not attacked by rust. In the leguminous section of field crops vetch varieties are given most attention. A late-maturing variety with a good stand is needed but up to the present difficulty has been experienced in securing the requisite features. *Vicia falgens* seems to be the most promising variety after *Vicia sativa* which is obtained from Syria.

COWPEAS.

145. Cowpeas are being cultivated with success both dry-grown and under irrigation. The demand of the dairying community for a cheaply-produced bulky forage has brought this crop into prominence. Work with two varieties Brabham and Whip-poor-Will, has been in progress for some time with various mixtures as a silage and green fodder. The only types of legumes grown are fenugreek mainly as a green manure, and tick beans for multiplication.

146. In the forage section, but only at the Acre station the principal features maintained are the duty of water experiments, and the intervals of irrigating and methods of irrigation on lucerne, maize, millets, cowpeas and berseem. This work is now in its fifth year and significant results are available. The introduction of new types of forage crops is continued. Comparative tests with imported and local berseem seed are under the second year of observation.

MAIZE.

147. This the most important summer crop in Jewish settlements is not popular with Arab cultivators except in the Hula Basin where free flow irrigation is available. As a grain crop Boesman's Yellow is most favoured, followed by Wisconsin White both of which give surprisingly good yields under dry cultivation. The crop is not suited to the area roughly south of a line Jaffa-Nablus. At Acre station the principal work maintained is the method of planting in conjunction with times of planting. Significant results are available after two years' work.

148. At both Acre and Majdal stations rotation and fertilizer experiments on cereals continue to be maintained. In the pasture section, trials with imported grasses are continued.

149. In the vegetable section at Acre, Majdal, Beisan and Sarafand, the introduction and acclimatization of imported varieties is carried out. Varietal and rotational trials from which definite results are to hand, and the production of seed for distribution to farmers and sale to seedsmen comprise the principal work done.

150. Experiments on pest and disease control in collaboration with the Plant Protection Service on field vegetable and irrigated crops, and also on stored grain have given very definite and significant data.

TOBACCO.

151. It is observed that the output of manufactured tobacco from factories has maintained a steady increase. On the other hand the number of growers licensed, the area planted and crop produced during the last few years show considerable fluctuation. To a great extent, apart from climatic conditions this fluctuation was due to high prices obtained during years when crops were small, encouraging excessive plantation in succeeding years. The fall in prices which inevitably followed this overproduction brought about in turn a reduction in plantation. This uncontrolled policy of cultivation has done much to weaken the position of the growers. Attempts have been made to grow tobacco over almost the whole of Palestine with varying measures of success, but by degrees, cultivation of tobacco of commercial quality has more or less become confined to the hilly districts of Acre and Safad. Tobacco grown on the plains and in the south of Palestine has proved unsuitable for use in factories and the inability to dispose of crops in accordance with the requirements of the law has gradually eliminated such plantations. In Samaria, however, considerable quantities of tobacco are still being grown, the greater part of which, finds its way into consumption through illicit channels.

152. During 1934 legislation was enacted to give the Director of Customs, Excise and Trade power to refuse the issue of licences to grow tobacco under certain conditions and this measure was of some assistance in eliminating some unsuitable plantations during the years 1935 and 1936, but the area and production nevertheless continued to increase ,and it was known that as a result of overproduction, some of the tobacco was disposed of illicitly. At the end of August, 1937, a stock of 1,884,882 kgs. of tobacco was held by manufacturers and dealers throughout the country and this alone represented nearly two years' supply for the local factories.

153. This large reserve together with overproduction in 1937, brought the prices of tobacco down to a very low level. Although the prices between the growers and manufacturers were fixed by contracts early in the season at 120, 100 and 80 mils per kg., for 1st, 2nd and 3rd grades respectively, the actual prices paid were in the majority of cases below 50% of the above figures.

154. This year 1,470,000 kgs. of tobacco leaf out of 2,497,650½ kgs. (the produce of 1937), have been authorised to be transported for sale to the various factories in the country. With the recent establishment of the Arab Union Cigarette Factory at Haifa, which was responsible for the purchase of 400,000 kgs. of this and the preceding year's crop, there is still a balance of over 1,000,000 kgs. left in stock undisposed of by the growers as on the 20th May, 1938.

155. Having regard to the dangers of overproduction, the High Commissioner appointed, during September, 1937, a committee to examine the possibility of introducing legislation to control the production of tobacco. This committee under the chairmanship of the Director of Customs, Excise and Trade, with representatives from this Department, the Treasury and the Administration submitted during the latter part of November, 1937, a comprehensive report with their recommendations, as an immediate and temporary measure, that Government should restrict the issue of licences to those cultivators who during any one of the last 3 years have sold tobacco to dealers and/or manufacturers. The total area so licensed should not be greater than is estimated to produce a crop of tobacco sufficient to meet the demands of the trade.

156. On 18th December, 1937, an official communiqué No. 21/37 was issued by Government announcing that, as an immediate and temporary measure, in the interest of cultivators the issue of licences to cultivate tobacco should be restricted to an area not exceeding 30,000 dunums for the year 1938. The contents of this communiqué was widely circulated to all growers through the press, the field staff of this Department and the excise officers, and the licences issued were for the cultivation of 29,812 dunums in the Northern Districts and 188 dunums in the Southern and Jerusalem Districts.

G. G. MASSON,
Chief Agricultural Officer.

12th June, 1938.

REPORT OF THE CHIEF VETERINARY OFFICER
FOR THE
YEAR 1ST APRIL, 1937, TO 31ST MARCH, 1938.

GENERAL.

157. The Veterinary Service continued to function as a branch of the Department of Agriculture and Fisheries, its main functions being the prevention of the introduction of animal contagious and infectious disease into the country, the control and eradication of such diseases within the country and the development of the local livestock husbandry and industry. Among subsidiary duties, which require considerable attention and to which district staff devote much of their time, should be mentioned the professional attendance to the remounts of the Palestine Police Force and His Majesty's Forces in Palestine.

158. The field staff of the Veterinary Branch consists of six senior veterinarians and eight qualified assistants, two poultry disease officers who are also veterinarians, six poultry and bee instructors and nineteen stock inspectors. All these employees are touring officers and, in the execution of their duties, visit frequently villages and settlements situated within the area under their supervision. Despite the disturbed conditions prevailing in the country during the period under review, the field staff was fully occupied and their services were sought and appreciated by the stock-owner.

159. The Chief Veterinary Officer was acting, in addition to his substantive duties, for the Director of Agriculture and Fisheries during the period from the 20th of June to 28th of October, 1937, inclusive. Later, he proceeded on four months vacation leave.

GOVERNMENT VETERINARY LABORATORY.

160. Mr. S.J. Gilbert, M.R.C.V.S., Senior Veterinary Research Officer, who was in charge of the Government Veterinary Laboratory since its inception, proceeded on leave in July, 1937, prior to retiring from the service, and was succeeded by Mr. G. B. Simmins, M.R.C.V.S., D.V.S.M., previously his assistant and holding the post of Veterinary Research Officer.

161. The work at the laboratory proceeded smoothly throughout the year and, in several branches, considerable increases occurred. It was not possible, however, to carry out any research other than that necessary to assist diagnosis, and serum production had to be completely abandoned. This was due to the absence of an assistant and also to the fact that, in addition to his own duties, the Senior Veterinary Research Officer was acting for the Chief Veterinary Officer for a period of four months during the latter's absence on vacation leave, necessitating frequent visits to headquarters.

162. Over 40,000 specimens (not including slides and smears) were received at the laboratory for examination in connection with routine diagnosis. Sub-inoculations made in connection with diagnosis were performed on 103 guinea-pigs, 188 rabbits, 260 rats, 158 mice, 97 fowls, 67 pigeons and 19 sheep. 3,546 slides from 1,543 field cases were stained and microscopically examined. Appendix No. 1 shows the results of these examinations.

GOVERNMENT STOCK FARM.

163. Work in all sections of the farm at Acre has continued to make satisfactory progress during the year. The breeding service has become so popular that applications were received for the purchase or loan of more than double the number of selected animals which it was possible to supply and the available stock of rams and male goats was sold fully five months before the beginning of the breeding season. The activities of the Stock Farm which are closely related with field operations are referred to in a subsequent section of this report.

164. There has been no material increase in establishment but a considerable improvement in quality has been effected by the purchase and importation of selected animals to replace the inferior stock eliminated by culling.

The present establishment of 1,053 head consists of :—

Bulls	55
Cows	65
Bull-calves	15
Heifer-calves	11
Horses	18
Donkeys	33
Working mules	6
Sheep	482
Goats	330
Pigs	38
Total	1,053

165. The general health of all stock has been very satisfactory. Thanks to the very mild winter, mortality among sheep and goats was unusually low (3.0 per cent.).

POULTRY STATIONS AND APIARIES.

166. The maintenance of first-quality stock birds is one of the most important activities of the Poultry and Bee Section of the Veterinary Service. The head of such Section is the Senior Poultry and Beekeeping Officer who is attached to headquarters. A large number of different breeds and strains of fowl is imported annually, tested and their progeny distributed to poultry farms.

167. The central Poultry Station and Apiary at Acre continued to function satisfactorily and almost all modern poultry farms in the country are stocked, directly or indirectly, with the progeny of this station.

The nine District Poultry Stations and Apiaries are located in various parts of the country and these meet the demands of the villagers for eggs for hatching and day-old chicks.

168. The following quantities of eggs for hatching and breeding stock were sold to farmers at nominal prices during the year under review :—

Hatching eggs	51,760
Day-old chicks	5,109
4-6 week-old chicks	272
Breeding poultry	4,934
Rabbits	167
Bee swarms	449

169. Government poultry stations serve to demonstrate to all farmers interested in improving their methods of poultry farming, the most modern methods of incubation, feeding, housing and management. In addition, most of the modern and approved poultry and bee equipment and appliances are tested and then demonstrated. The local poultry farmer takes keen interest in such demontrations and adopts those methods which prove, after practical experimentation at Government stations, to be satisfactory.

EXTENSION WORK.

170. Considerable time and attention is devoted by field officers to extension work. Improvements in the methods of management of all classes of stock are made the object of an energetic propaganda. The provision of adequate housing during the winter, and of shade, water and protection from flies during the summer, a logical programme of breeding operations and the control of pests and diseases by such methods as dipping and drenching, are some of the many subjects dealt with. In addition, the Veterinary Service seeks to encourage animal husbandry by issuing free of charge the poultry, rabbits and bees required for demonstrational purposes in school gardens.

Apart from direct contact, propaganda is conducted in the form of radio talks to farmers and leading articles on topical subjects are published occasionally in the Agricultural Supplement to the Palestine Gazette.

171. To propagate the latest theoretical and practical knowledge in poultry and beekeeping among farmers, two refresher courses each of one week's duration, were held during the period under review: one for poultry farmers and one for beekeepers. Each course was attended by over 100 students. These courses proved to be of considerable value and it is intended to hold similar courses annually.

172. During the year, some forty students attended at Acre Stock Farm and Poultry Station a three-months course of instruction in the practical management of livestock, poultry and bees.

ANIMAL ENUMERATION.

173. The fourth biennial enumeration of livestock was taken during July, 1937. According to this enumeration, there were in the country 175,000 cattle, 209,000 sheep, 361,000 goats, 20,000 horses, 9,000 mules, 92,000 donkeys, 28,000 camels and 2,660,000 poultry. With the exception of a small decrease in the case of goats and camels, there has been an increase in all classes of animals, particularly in the case of poultry the number of which has risen from a million and half in 1934 to over two millions and half in 1937. Statistical data of this enumeration are given in Appendices Nos. 2 and 3.

ANIMAL DISEASES.

174. The country continued to remain free from serious epizootic diseases such as cattle plague, bovine pleuro-pneumonia and haemorrhagic septicaemia.

FOOT-AND-MOUTH DISEASE.

175. Foot-and-mouth disease, which broke out early in February, 1937, having been introduced by smuggled cattle from an adjacent territory, spread fairly rapidly during the spring and early summer and the disease was reported to occur in over 200 villages and settlements. The incidence of the disease subsided towards the end of July; only one outbreak occurring in August while no outbreaks were reported during September and October. In November, however, the disease reappeared in the Galilee and Acre District and gradually spread throughout the whole country. Attempts to prevent the spread of this disease in previous outbreaks some years back, by the introduction of a standstill order and other drastic compulsory measures, failed owing to the very highly infectious nature of foot-and-mouth disease and the ease with which it is spread by many indirect ways and means. Such measures consequently were not applied again.

176. The local type of the disease is mild and causes little loss among native cattle. The control measures taken in villages are confined to artificial transmission of the disease to all cattle exposed to infection and to temporary prohibition of movement of such affected bovines. When grade and improved dairy cattle are attacked however by the disease, the losses are heavy; milk yields fall; lesions, particularly those in the mouth and on the udder, are severe, and the beasts lose condition rapidly. As a result, many dairy cows must be sold for slaughter at butcher's prices and at a considerable loss to their owners.

177. In settlements where high-class breeding and dairy cattle are found very strict voluntary quarantine measures were introduced and, so far, the disease has spread only to a few of these settlements. In March, 1938, the importation of cattle from Syria, the Lebanon and Trans-Jordan was prohibited as a precautionary measure.

178. As foot-and-mouth disease is prevalent and spreading rapidly on the Continent of Europe, and as Palestine depends chiefly on south-eastern European countries for its supplies of slaughter cattle, there is a constant danger of the European type of foot-and-mouth disease being introduced into Palestine, as such type may or may not, if introduced into Palestine, cause considerable losses and the risk is too grave to be taken. The Veterinary Service consequently is taking every possible precautionary measure to minimise this danger. The importation of frozen or chilled carcases of cattle, sheep, goats and pigs from the Continent of Europe was prohibited in March, 1938, and as an infected shipment of cattle arrived from Poland early in April further importation of cattle from that country was prohibited forthwith.

TICK FEVERS.

179. Tick-borne diseases continue to take a toll of the country's animals. However, mortality among village livestock was not considerable during the period under review owing to the good condition of these animals and increased vitality as a result of there being abundant grazing. Losses among dairy cattle dipped regularly were negligible. Dipping of village sheep and goats in Government portable tanks and in permanent baths constructed by villagers with Government's assistance was continued with satisfactory results. In June, 1937, rules were promulgated under the Animal Diseases Ordinance prescribing that regular dipping of sheep and goats shall be conducted in declared infected areas and that a fee shall be paid annually by owners of such animals. This scheme is a voluntary one the intention being to declare only those localities to be infected areas in which the majority of the owners of sheep and goats apply to Governement for the regular dipping of their animals after having seen the good results achieved by such dipping in Government demonstration portable tanks. Owing to the disturbed conditions in the country, however, it has not been possible so far to introduce this scheme.

BOVINE CONTAGIOUS ABORTION.

180. Further progress in the control and eradication of this disease is to be recorded. A steady increase has taken place in the number of herds accepted for regular testing in connection with the approved control scheme. The total number of herds now under control is 125—an increase of 16 over last year. The majority of the herds is entirely free of the disease.

181. The Government Veterinary Laboratory has performed in this connection over 34.000 agglutination tests of which 195 have proved positive and 121 doubtful. Further, over 5,000 agglutination re-tests have been made. Reactions which are finally considered doubtful have comprised only 0.42% of the total number of tests.

182. Imported dairy cattle are tested for this disease before release from quarantine. 170 such cattle were tested with 5 positive reactors which have been slaughtered.

183. The practice of testing cattle before purchase is becoming established here and 991 tests for private practitioners on behalf of persons wishing to purchase cattle have been carried out ; a small charge is made for each test.

TUBERCULOSIS.

184. Following the results of the survey conducted last year which indicated that there is a considerable increase in the incidence of the disease since the survey conducted in 1928, a plan was submitted to Government for the eradication of bovine tuberculosis. Owing to the present financial position of Government, however, it has been found necessary to delete from the estimates the provision of funds for the purpose.

JOHNE'S DISEASE OF CATTLE.

185. Two positive cases of this disease were confirmed by the laboratory.

BLACK-QUARTER IN CATTLE.

186. The only outbreak reported during the year was from Mishmar ha Yarden settlement in Safad Sub-District, where black-quarter occurred previously. Losses were negligible.

MASTITIS.

187. It is reported that bovine contagious mastitis which is caused by Streptococcus agalactiae is causing considerable losses in dairy herds. It has not been possible to attack this disease as yet owing to lack of funds and personnel. 254 samples of milk from cows, sheep and goats were examined during the period under review at the Government Veterinary Laboratory with the following results :—

Streptococcus agalactiae	25
Streptococci, other varieties	24
Staphylococci	25
B. pyogenes	6
B. coli	2
B. pyocyaneus	1
B. tuberculosis	1

ANTHRAX.

188. Fifteen thousand animals were involved in fifty-six outbreaks of anthrax of which 221 died and the remainder were immunised by vaccination and further mortality was thus checked. Over 30,000 sheep and goats were treated as a protective measure, with anthrax vaccine in Jerusalem District, after payment by the owners of ten mils per head. In settlements, annual protective vaccination is practised regularly with excellent results. To make protective vaccination compulsory in those areas where the majority of flock-masters are willing to meet the cost of such treatment, suitable rules were promulgated during the period under review.

189. The incidence of anthrax during the last five years is recorded in Appendix No. 4.

DOURINE.

190. In pursuance of Government's dourine control policy to test periodically all mares and stallions used for breeding purposes, 2,721 blood specimens were collected by the field staff and submitted to the Government Veterinary Laboratory for subjection to the complement fixation test. Sixty-two mares and eight stallions were found to be affected. The stallions were castrated and thus rendered incapable of spreading the disease, while a part of the diseased mares was destroyed and their owners compensated in accordance with the provisions of the Animal Diseases Ordinance and the remaining mares branded and their use for breeding purposes prohibited. Fifty-one stud stallions were tested and licensed in accordance with the provisions of the Dourine Rules. All sera are double-tested at the Government Veterinary Laboratory in order that there should be no possibility of technical error and the total number of tests have therefore amounted to about 6,300.

GLANDERS AND EPIZOOTIC LYMPHANGITIS.

191. Seventeen cases of glanders and ten of epizootic lymphangitis were reported during the year. The epizootic lymphangitis cases were confirmed by microscopical examination at the Government Veterinary Laboratory. Affected animals were destroyed and buried. In accordance with the provisions of the Animal Diseases Ordinance, owners reporting these diseases in the early stages are compensated for loss sustained; this encourages owners to report cases of these diseases and thus the spread of such diseases is limited.

DISEASES OF SWINE.

192. No outbreaks of contagious or infectious diseases of swine were observed or reported.

SHEEP AND GOAT-POX.

193. Several sporadic outbreaks of sheep- and goat-pox were reported and satisfactorily suppressed by suitable segregation measures.

RABIES IN ANIMALS.

194. Rabies is endemic in the country and probably also in adjacent territories. The reservoir is wild carnivora and unless such animals are exterminated in this and adjacent countries no hope can be held out of eradication of the disease. Efforts are therefore directed to limit the spread of this disease by (a) destruction of as many stray and ownerless dogs as possible throughout the country, (b) reducing to the minimum the number of dogs kept in villages and (c) licensing and registration of dogs in towns. Further, prophylactic vaccination is adopted by owners of pet dogs on a small scale.

195. 132 suspected cases of rabies were reported and dealt with. Of these, twenty-one were confirmed by the Government Central Laboratories and the remainder were confirmed by Government Veterinary Officers judging from clinical symptoms. 819 biting animals were kept under observation in kennels and of these fourteen were found to be rabid. About 25,000 dogs and cats were destroyed with the assistance of the Police and local authorities as compared with 19,430 animals destroyed during the preceding year. The incidence of rabies by veterinary district and kind of animal is indicated in Appendix No. 5.

DISEASES OF POULTRY—GENERAL.

196. The general condition of health of poultry raised on modern poultry farms was quite satisfactory and no serious outbreaks of disease among poultry were reported from villages.

With the exception of sporadic outbreaks of contagious disease, the health of growing chicks was good and disease, although prevalent on some farms, has not hindered to any great extent the development of the poultry industry.

FOWL PLAGUE.

197. An outbreak of fowl plague was confirmed towards the end of March of last year in the settlement of Tel 'Adashim in Nazareth Sub-District. The same disease was diagnosed in April in Mizra' settlement of the same Sub-District. Three additional isolated outbreaks, one in the South and two in the North, were diagnosed during the same month. Enquiries revealed that the pest was introduced from Syria and the importation of poultry from Syria and the Lebanon was prohibited. As a further precautionary measure, the movement of poultry among the villages and settlements situated along the frontiers was prohibited. A strict self-imposed quarantine was practised by all modern poultry farms. Compulsory slaughter of all infected and in-contact birds was practised in the infected localities and owners were compensated. Following slaughter, the infected premises were disinfected and kept free of poultry for a period of four months. As a result of the prompt measures of control taken, the disease was confined to the original centres of infection and the country was declared to be free of fowl plague in May.

FOWL POX.

198. Seventy-three outbreaks were reported and dealt with. Pigeon pox vaccine prepared by the Government Veterinary Laboratory and from various other sources, and chicken pox vaccine prepared by the Hebrew University, were used by poultry farmers in protecting their flocks.

FOWL CHOLERA.

199. Sixteen sporadic outbreaks of this disease were reported and dealt with. In five cases, the complete liquidation of the affected flocks was found necessary for the purposes of control. Isolated outbreaks of wattle disease, caused by *Pasteurella avicida*, were also diagnosed and controlled.

FOWL TYPHOID.

200. Eleven outbreaks of this disease were reported, chiefly from villages. One outbreak was diagnosed in baby chicks in which case the source of the hatching eggs was ascertained and the breeding flock was tested and found free from carriers. In other outbreaks, the Government Veterinary Laboratory fowl typhoid vaccine was used, coupled with the usual sanitary measures, with good results.

SALMONELLA INFECTION.

201. Salmonella was isolated from a severe outbreak among baby chicks and in five outbreaks among ducklings in various centres. The sources of hatching eggs were ascertained and the possibility of detecting carriers is now under consideration. The destruction of badly affected chicks and strict sanitation were advised with beneficial results.

FOWL PARALYSIS.

202. The number of cases of paralysis increased considerably and caused grave anxiety among poultry farmers. Severe culling of all breeding stock was practised with the hope of reducing losses in growing stock.

SPIROCHAETOSIS.

203. Numerous outbreaks of the disease were reported. The Hebrew University, with the financial assistance of Government, is studying the possibility of immunisation and certain experiments were carried out during the year on some poultry farms. However, until definite results are achieved, the eradication of ticks and treatment with Neosalvarsan and Spirocid are the best methods of reducing losses and these are advocated in each case.

LEUKEMIA.

204. Leukemia which was found to be closely allied to cases of fowl paralysis, was often met with on post-mortem examination.

COCCIDIOSIS.

205. Caecal coccidiosis was not observed. However, other forms were noted on numerous farms. The use of wire-netting floors and sun-porches on the one hand, and sanitary measures and the feeding of milk in various forms, on the other, reduced the number of outbreaks.

CORYZA.

206. Coryza was prevalent among growing stock. On six farms the complete isolation and separation between adult and young stock proved to be the best method of control of this disease. These farms, which suffered year after year in the past, were almost completely free of the disease during the period under review, and it is intended to further this method of control.

BABY CHICKS' AFFECTIONS.

207. The following conditions and diseases were met with among baby chicks: fowl pox, coccidiosis, chill, non-specific bacterial infections, navel-ill (*omphalitis*), salmonella infecion and nutritional paralysis.

DISEASES AMONG RABBITS.

208. One case of haemorrhagic septicaemia was dealt with. Several cases of coccidiosis were diagnosed. Measures of control and eradication of rabbit disease were advised to the different rabbit keepers of the country.

BEE DISEASES.

209. Several cases of foul brood were diagnosed but the control of this serious affection is well in hand and beehives are being inspected by special officers regularly. Advice was given to beekeepers on wax-moth destruction and the control of other bee disease and methods of treatment of affected colonies were explained to them.

QUARANTINE.

GENERAL.

210. Constant vigilance is required on the part of the quarantine staff to ensure the prevention of the introduction of epizootic diseases into this country, especially as the natural features of the frontiers make smuggling an easy task and the local demand for beef, mutton and poultry flesh is great. The task of the quarantine section of the Veterinary Service was more difficult during the year under review than in normal times. However, the work at quarantine stations was quite satisfactory and the total number of stock which passed through such stations increased from 320 thousands in 1936/37 to 391 thousands in 1937/38.

IMPORTS FROM ADJACENT TERRITORIES.

211. There were imported from adjacent territories through land frontier animal quarantine stations some 800 equines, 19,500 camels, 2,500 head of cattle and 215 thousand sheep and goats. These animals were detained in quarantine for different periods, as prescribed by the Animal Quarantine Rules and were carefully examined before release. Different diseases were intercepted at frontier stations and consignments involved were suitably dealt with.

IMPORTS BY SEA.

212. There was a considerable decrease in the number of slaughter cattle imported by sea, namely, from thirty thousand in 1936/37 to twenty-three thousand in 1937/38; this was due mainly to the economic depression in the country. Rumania figures first on the list of countries from which slaughter cattle were imported with 14,500 head, and is followed by Yugoslavia with 3,735 head and Bulgaria with 1,800 head. There was a noteworthy increase in the cattle imported from Cyprus, viz. from 562 in 1936/37 to 1,215 in 1937/38. Towards the end of 1937, the importation of slaughter cattle was permitted from the Sudan but, due to the detection on slaughter of several cases of bovine contagious pleuro-pneumonia among cattle of the first two shipments, the embargo on Sudanese cattle was reintroduced.

IMPORTS OF POULTRY.

213. There was a notable decrease in the number of table poultry imported by sea, namely from 1,835,000 in 1936/37 to 662,000 in 1937/38. This decrease is due to some extent to the decreased demand but chiefly to the fact that poultry imported from overseas are now dutiable while those imported from adjacent territories are free from the payment of any duty. For this reason, overland imports increased from some 186,000 birds in 1936/37 to 379,000 in 1937/38.

LEGISLATION.

214. Rules made under the Animals Diseases Ordinance during the year are shown in Appendix No. 6.

ANIMAL HUSBANDRY.

GENERAL.

215. As in the past years, the stock-breeding service was extended to the public through different channels, some of which are mentioned below.

(a) Animals brought to the Stock Farm at Acre were served free of charge;
(b) Selected sires were stationed in different districts throughout the breeding season;
(c) High class stud animals were issued on loan to a large number of villages and, in very poor villages, forage for the Government sires was occasionally supplied free of charge;
(d) Selected sires of all classes of stock were sold to bona fide breeders at nominal prices;
(e) Premiums were paid to owners of selected village sires used for serving the female stock of the respective villages.

STUD SIRES MAINTAINED AT ACRE STOCK FARM.

216. The services of the following stud animals maintained at the farm were placed at the disposal of local stock-breeders :—

Kind	Breed	Number
Bulls	Lebanese	8
	Kerry	2
	Boaz	2
Stallions	Arab	4
	West Highland Pony	1
Jackasses	Cyprian	2
	Damascus	2
Rams	Awasi	27
	Karakul	10
Billy-goats	Mamber	42
	Damascus	15
Boars	Large White	2
	Middle White	1
	Total	118

DISTRIBUTION OF SIRES TO DISTRICTS.

217. Fifty-six selected sires, details of which are given below, were either distributed to the districts under the charge of Veterinary Officers, or were issued on loan to villages or groups of farmers for the breeding season.

Kind	Breed	Number
Bulls	Lebanese	36
	Kerry	5
	Guernsey	2
	Boaz	1
Stallions	Arab	2
	West Higland Pony	1
Jackasses	Cyprian	4
	Damascus	4
Rams	Karakul	1
	Total	56

SERVICES PERFORMED BY GOVERNMENT SIRES.

218. It is estimated that during the year some 2,500 village cows have been served by Government bulls. The following free services were recorded at the farm :—

Bulls	1,345
Stallions	161
Jackasses	203
Total	1,709

SALES OF SELECTED BREEDING STOCK.

219. The following selected and, in some cases, pedigree stock were sold to breeders at nominal prices :—

Bulls	2
Cows	6
Jackasses	3
Rams	64
Ewes	57
Male goats	114
Female goats	65
Piglets	88
Total	399

BREEDS MAINTAINED AT ACRE STOCK FARM.

Lebanese Cattle.

220. The Lebanese herd, which consists of 45 cows, 44 bulls, 7 heifer- and 9 bull-calves, is maintained primarily to produce bulls from selected dams for distribution and cross-breeding on the local cattle. The herd has been increased by 23 head during the year under report, and the standard of quality has been raised by the introduction of 14 cows purchased in Syria. The average milk yield of the herd was 2,800 litres and the butter fat content 3.9 per cent. Farmers are well satisfied with the appearance and performance of the cross-bred females and are now making applications to purchase Lebanese bulls for themselves.

Kerry Cattle.

221. On account of its hardiness, small maintenance requirements and comparatively high yield of rich milk, the Kerry was considered the most suitable of the European breeds for crossing to improve the milk yield of local cattle. A herd of 12 cows is maintained, together with 7 bulls and 6 calves, 4 of which are bull-calves and 2 are heifers. The average milk yield of the herd was 3,200 litres at 4.0 per cent. fat. The breed appears to be acclimatising well, and confinment during the tick season is no longer considered necessary. The progeny of the Kerry-Local cross are becoming very popular with fellaheen, particularly in the neighbourhood of towns, while the Jewish farmers are beginning to realise that the Kerry cow is a more economical producer of butter fat than the Friesian.

Guernsey Cattle.

222. The present market for fluid milk is saturated and the surplus must be made into butter. The Friesian cows of the Jewish settlements give milk which is too poor in fat to permit of this product being manufactured at a profit. To meet the situation, Government has introduced the Guernsey breed, the bulls of which are used for crossing on the Friesian stock. The present nucleus consists of 4 cows, 2 bulls, 2 heifer-calves and 1 bull-calf. The four in-calf cows were imported this season. The services of the Guernsey bulls are in great demand, and the progeny look very promising, but it is as yet too early to know what will be the improvement in the fat-content of the milk of the cross-bred strain.

Arab Horses.

223. The stud of pedigree Arab horses, which is maintained to improve the Arab blood in the country, consists of 6 stallions, 6 brood mares, with 2 colts and 2 filly-foals. The stud has been increased and new blood introduced by the purchase of 2 pedigree stallions from Syria

and a mare from Trans-Jordan. The free services are very much appreciated by the Arab horse-breeders, many of whom ride great distances in order to have their mares served by a Government stallion. On account of the prevelance of dourine in the country, all mares are blood-tested before service.

West Highland Ponies.

224. Two West Highland Pony stallions are maintained for crossing on village mares of the Arab type with the object of producing a stronger animal for agricultural work. There are good indications that the mares of this cross, when bred to jackasses, will produce a satisfactory working mule. The stallions are issued on loan and the progeny of services performed in previous years are showing excellent conformation.

Awasi Sheep.

225. Culling and selective mating are carried on with the local or Awasi breed of sheep with the object of increasing the milk yield. The present flock consists of 199 ewes, 27 rams, 49 ewe-lambs and 41 ram-lambs. Half of the ewes are bred to pedigree Karakul rams for the production of "Persian" lamb skins, while the other half are kept for the production of selected Awasi rams for sale. Fifty-nine rams were sold to farmers during the year.

Karakul Sheep.

226. The Awasi sheep is closely related to the Karakul and pedigree stock of the latter breed were imported from Germany, Rumania and France in 1934. The Karakul rams were crossed on a flock of 100 selected Awasi ewes to produce lamb skins of the Karakul type, since it was felt that such cross-bred skins would find a place on the expanding market, and would at the same time provide the sheep farmers of Palestine with an article of export and a source of revenue in addition to that derived from the sale of milk and fat lambs.

227. A trial shipment of skins in 1933 was the subject of a very encouraging report from the Imperial Institute. The experiment was continued and a further batch of 57 skins of the first and second crosses were sent to London for examination. The following extract from the Imperial Institute's report on this consignment is a good augury for the success of the experiment:—

> "Taken all round the turn-out of first skins is very promising and we are convinced that with the right co-operation between the selling organisation and the breeders, a large and profitable business can be established.
>
> "The results for a first crossing are considered remarkably good".

Sir Harry Lindsay writes:—

> "The Palestine skins must be practically identical with the commercial skins now produced in South West Africa. The results of the 2nd crossing are very satisfactory".

228. The consignment was valued by a London firm of fur brokers and the highest prices quoted were 25s. for first- and 30s. for second-cross skins, while the average prices were 13s. and 21s. respectively.

229. The flock of pure Karakuls has been increased to 19 ewes, 10 rams, 13 ewe-lambs and 5 ram-lambs. The cross-bred flock consists of 66 first-cross and 16 second-cross ewes.

230. Several applications have been received from Jewish sheep-breeders for the issue of pure-bred Karakul rams on loan, but owing to the limited number available, only one could be distributed, and that was used at Ginegar colony in Nazareth Sub-District to repeat our own cross-breeding experiment.

Mamber Goats.

231. A flock of the Mamber or Syrian breed is maintained, since while still retaining the valuable characteristic of hardiness, this breed is purer and gives a better milk yield than the local mountain goat. The flock comprises 73 females and 42 males, with 20 female and 16 male kids. The present policy is gradually to substitute the Damascus for the Mamber breed since, although a more delicate animal, farmers prefer the Damascus goat on account of its higher milk yield. One hundred and forty-six selected Mamber goats were sold for breeding at nominal prices during the year.

Damascus Goats.

232. The flock, which consists of 90 females and 15 males with 30 female and 36 male kids, has been increased and improved by the introduction of 30 selected goats, most of which were purchased in Syria. Milk recording is carried on and an attempt is being made to increase yields by selective mating. The issue of rams and male goats on loan has been discontinued, and instead farmers are now being encouraged to purchase selected sires at nominal prices. Thirty stud goats of the Damascus breed were sold during the year.

Large White and Middle White Pigs.

233. Pig raising has been encouraged by the introduction of the Large White and Middle White breeds. Breeders are enabled to avail themselves of the services of pedigree boars, and some 500 head of breeding stock have been sold at LP.1 each since 1932. The present herd consists of 6 sows, 3 boars and 29 piglets. Eighty-five piglets were sold for breeding during the year, and only a fraction of the orders received could be supplied.

FEEDING EXPERIMENTS.

Carobs, Jilbana (Chickling vetch) and Kersenna (Bitter vetch).

234. Experimental feeding with 28 Lebanese bulls conducted at Acre Stock Farm over a period of three months showed that, weight for weight, carobs are not so nutritious a food as barley, but, on the basis of food-unit costs, they are as valuable as barley, if not more valuable. Kersenna and Jilbana were found to be cheap and suitable sources of protein, but animals fed on coco-nut cake gained more rapidly and economically than those fed on the local pulses.

Spineless Cactus.

235. A plantation of the local spineless cactus has been established at Acre Stock Farm, but it has been found that this reverts to the spined condition when cultivated. It is proposed to introduce spineless varieties from Malta, U.S.A. and South Africa, with a view to determining their suitability as a food for stock during the dry season.

EXPERIMENTS CONDUCTED AT ACRE POULTRY STATION.

236. Experimental activities of the Poultry Section are concentrated at the central station at Acre, while only local problems are studied at district stations. The experimental work embraces a wide field of projects, such as feeding, housing, rearing, management and equipment.

(a) *Feeding.* In the feeding experiments, various rations are fed to study the effect on the health, production and profitability of hens. In this series of experiments, the correct protein level, the use of dry or wet mash, sprouted grain and other recommended rations for poultry are being investigated.

(b) *Housing.* Different patterned houses, constructed of different building materials, are being studied with the aim of finding the most suitable and, at the same time, the most economical poultry house that can be introduced in this country. From results obtained, it is evident that houses built of locally-made concrete slabs, called "Betonada", are the most economical and reliable. This material is vermin-proof, weather-proof and fire-proof; moreover, it is a local product and only a small part of the ingredients required for its manufacture must be imported. As to the pattern of house, the slatted-floor house, which has been thoroughly tested at Acre, is now very popular on poultry farms and a good many houses of this style are being introduced.

(c) *Rearing.* Various methods of rearing with batteries, wire-netting floors, sun-porches, etc., are all under careful investigation at Acre. Those methods found promising, e.g. sun-porches, free range, etc., are recommended to farmers and are readily adopted by them.

(d) *Management and Equipment.* Various methods of management and kinds of modern equipment are thoroughly tested and those that are approved are recommended to farmers for adoption.

THE LIVESTOCK INDUSTRY.

237. The year 1937 was a particularly fortunate one for stock-raisers. Both winter-sown and summer crops were good and the stubbles provided a fair amount of grazing. The rains were early and plentiful in consequence of which pasture was comparatively abundant. The winter was mild and the summer cool. The number of cases in which animals died from starvation or exposure was few. Some losses were occasioned by tick fevers during the summer, especially in those areas where regular dipping was not practised, and a general outbreak of foot-and-mouth disease was responsible for a temporary but considerable reduction in milk yields and for some losses, specially among imported dairy stock.

238. Although the number of practically all classes of livestock are increasing and the quality of the stock is constantly being improved, the animal industry is still of only secondary importance in comparison with agriculture. This is due primarily to the effect of adverse natural conditions. The climate is extreme and varies from stifling heat in summer to freezing temperatures with cold winds and heavy rains in winter. Grazing is restricted to waste lands, the area of which is rapidly decreasing, and a prolonged dry season results in an almost complete lack of natural pasture for 7 months of the year. Emaciated by starvation and weakened by exposure it is little wonder that native stock fall a ready prey to the many diseases which affect their kind.

239. The fellaheen or Arab peasant farmers, who form 50% of the agricultural population, are fair cultivators but very poor stock-men. They have little interest in livestock except in so far as they need animals to cultivate their fields. In common with other primitive stock-raising communities, they aim at numbers rather than quality. The flocks and herds manage to scavenge a precarious existence from the stubbles and natural herbage during the summer, and only exceptionally is special provision made for feeding or housing in winter. Under such conditions of animal husbandry maturity is protracted, mortality is heavy and milk production very meagre.

240. On the other hand, in the Jewish and German settlements, which are situated for the most part on irrigable plains, a high standard of animal husbandry and a properly-planned system of mixed farming obtains. Herds of pedigree dairy cows are kept, which are mostly of imported Friesian stock. Abundant crops of oat-and-vetch hay, silage, roots, and green food are grown under irrigation, while imported cakes and other concentrates are used to balance the ration. The animals are housed in expensive buildings, well-designed and properly-equipped, and careful attention is given to management. Under such conditions animals mature rapidly, mortality is low, and milk yields are high—but the cost of production is so high as to leave very little profit to the producer.

241. Particulars of the numbers of the different classes of stock in the country are given in Section VI of this report and also in Appendices 2 and 3. There are in all some 318,000 head of large stock, 570,000 head of sheep and goats and 2½ million head of poultry. The estimated value of this stock is 4½ million pounds, while the annual value of animal products (including manure) is approximately 2 million. Since 40% of the total population are town dwellers, the demand for animal products is more than double the local supply and fluid milk is the only one in which the community is self-sufficing. During the calendar year 1937 animal products were imported up to a total value of more than 2 million pounds :—

	£P.
Milk products	393,957
Livestock for food	660,805
Meat, preserved	697,413
Poultry and eggs	291,600
Hides and skins	72,408
Organic manure	14,735
Total	£P.2.130,918

During the same year £P.138,000 were expended on imports of animal feeding stuffs.

242. The number of cattle in the country is steadily increasing, and now totals some 170,000 of which 35,000 are calves, 23,000 are heifers, 75,000 are cows, 7,000 are bulls and 30,000 are castrated working oxen. Of the cows, some 63,000 are village stock of the Arab

type of which about 30,000 are milch cows which give an average annual yield of 600 litres at 4.0—5.0 per cent. fat. The remaining 12,000 are improved dairy cows kept mainly in the Jewish colonies. Such cows give an average annual milk yield of 3,000 litres at 3.2 per cent fat. The estimated annual production of cows' milk is 45 million litres, of which approximately 1/3 is produced in Arab villages and 2/3 in Jewish and German settlements. The milk produced in Arab villages (including that from sheep and goats) suffices to supply the Arab population with its requirements of fresh milk, 'leben', native butter and cheese. The cows' milk produced in Jewish colonies is sufficient to supply the requirements of the large towns for fresh milk, 'leben', and cream, and to leave a surplus of 8½ million litres, from which is manufactured 350 tons or 13% of the total requirement of butter. On Jewish farms the cost of milk production, including processing and transport to the distributing centre, averages 15.7 mils per litre. This cost is about twice as high as the average for countries on the Continent of Europe. Fresh milk, cream and 'leben' are retailed at a profit but surplus milk which is left over for conversion into butter is sold at a loss. (Imported butter sells at 170 mils per kg., while local butter sells at 250 mils per kg.). There is therefore an economic crisis among producers and immediate relief is sought in a proposal to restrict the import of butter by a quota system, and to encourage the consumption of more fresh milk produced locally with the assistance of a drink-more-milk campaign for children of school age. Drastic measures are being taken to reduce the cost of milk production. These include the substitution of home-grown for imported concentrates, the simplification of housing and the introduction of labour-saving equipment. The crisis has had many and far-reaching effects on animal husbandry. Breeding has been restricted and the number of young stock in the colonies has been reduced by 25%. There is a tendency to change from the Friesian to a smaller and more economical type of cow, and a tendency for dairy farming to become restricted to the most suitable areas.

243. There is a large market for fresh beef and only a fraction of the requirements can be supplied locally. 27,000 head of cattle were imported during 1937 at a value of £P.330,000. The development of the local beef industry is unlikely in view of the lack of natural pasture and the high cost of producing fodder under irrigation.

244. The number of sheep and goats in the country has declined from 860,000 to 570,000 in the space of ten years. This decline may be attributed to the limitation of the grazing area as a result of the extension of land settlement and cultivation. There are at present 209,000 sheep, almost all of which are of the local or Awasi breed, of these sheep only 13,000 are Jewish-owned. Sheep are kept mainly for their milk, which is used for the manufacture of native butter and cheese, but also for the production of fat lambs. The wool is of poor quality and is used only for carpet making. The annual milk yield varies from 25 to 220 litres and averages 40 litres in the hill areas and 80 litres a year under intensive management. 230,000 sheep were imported and 224,000 were slaughtered for food during 1937.

245. There are in the country some 360,000 goats, of which the majority are of the local black breed which roams the hill slopes. The milk yield of local goats is about 150 litres per annum. In the neighbourhood of towns there are a few thousand head of dairy goats of the Damascus breed which give an average milk yield of 400 litres per annum, while in the Jewish colonies there are a few Saanen goats of an annual milk yield averaging 750 litres. The total production of sheep and goat milk is estimated at 43 million litres.

246. Pig raising is carried on by about 150 German and Christian Arab farmers. These farmers produce some 2,000 pigs annually, which are slaughtered when they attain an average live-weight of 85 kgs. The average price paid by butchers is 55 mils a kg. and the retail price of flesh is 120 mils. The predominant breeds are Large and Middle White. Pig products such as bacon, ham and lard are imported to a value of £P.30,000 annually.

247. There are in the country some 2½ million head of poultry, of which about one million are laying hens. Egg-production during 1937 was estimated at 108 million, and the production of table poultry at 2 million. The consumption of eggs exceeds local production by 93 million. Eggs and table poultry were imported to a value of £P.290,000. Among the peasantry the poultry are left to scavenge the farm-yard and the average annual egg-production is 80. In the Jewish colonies a modern poultry industry has developed. The main object is intensive egg-production and the breed kept is the White Leghorn. Complex balanced rations are fed and the very latest methods of incubation, rearing and management are adopted. The average annual egg-production under such conditions is 150 per bird. There is still room for a very considerable development in egg and poultry production but the industry is largely dependent

upon imported foodstuffs and this renders difficult competition with exporting countries in which the birds are kept under range conditions and little or no expenditure on foodstuffs is incurred.

248. There are 620 modern beekeepers owning some 27,000 populated hives. Honey production was 275 tons of which 10½ tons were exported. The fellaheen have adopted modern methods of beekeeping.

249. Subsidiary to and dependent upon the animal industry are the tanneries, sausage factories and the manufacture of bone and blood meal, hair, hoof and horn. There are 15 small tanneries in the country and these produced a total of 442 tons of leather of all kinds during 1937. The business appears to be profitable only when practised on a small scale with family labour. Imports of leather were valued at £P.413,000 and exports at £P.27,000.

250. There are 23 small sausage factories which are operated mostly by German-Jewish immigrants and which cater for the Jewish market. The meat used is mainly imported beef and 90% of the casings are imported . The kinds of sausage made include Havanah, Salameh, Blockwurst, Wiener and Savaloy. The cost of production averages 65 mils per kg. and retail price varies from 120 to 320 mils. One hundred and fifty tons of sausages were imported during 1937 at a value of £P.13,000.

J. M. SMITH,
Chief Veterinary Officer.

6th June, 1938.

APPENDIX No. 1

DIAGNOSES.

RESULTS OF EXAMINATION OF SPECIMENS SUBMITTED FOR DIAGNOSIS 1937-38.

Disease	Cattle	Horses, Mules and Donkeys	Sheep	Goats	Poultry	Bees	Rabbits	Dogs	Total
Piroplasmoses.									
Acute Theileria annulata	7	—	—	—	—	—	—	—	7
Theileria annulata	114	—	—	—	—	—	—	—	114
Anaplasmosis	46	—	—	2	—	—	—	—	48
Piroplasma bigeminum	37	—	—	—	—	—	—	—	37
Babesia bovis	33	—	—	—	—	—	—	—	33
Babesia ovis	—	—	3	—	—	—	—	—	3
Theileria ovis	—	—	1	—	—	—	—	—	1
Blue bodies	1	—	—	—	—	—	—	—	1
Anthrax	42	1	57	45	—	—	—	—	145
Epizootic lymphangitis	—	9	—	—	—	—	—	—	9
Tuberculosis	2	—	—	—	—	—	—	—	2
Pulpy kidney disease	—	—	6	—	—	—	—	—	6
Black disease	—	—	1	—	—	—	—	—	1
Sarcoptic mange	—	—	—	1	—	—	—	—	1
Psoroptic mange	—	1	—	—	—	—	—	—	1
Vibrio fetus	2	—	1	—	—	—	—	—	3
Brucella abortus	2	—	—	—	—	—	—	—	2
Actinomycosis	1	—	—	—	—	—	—	—	1
Strongylosis	—	3	—	—	—	—	—	—	3
Oxyuriasis	—	1	—	—	—	—	—	—	1
Black quarter	1	—	—	—	—	—	—	—	1
Haemorrhagic septicaemia	—	—	—	—	—	—	1	—	1
Paratuberculosis	2	—	—	—	—	—	—	—	2
Mastitis.									
Streptococcus agalactiae	25	—	—	—	—	—	—	—	25
Streptococci other varieties	24	—	—	—	—	—	—	—	24
Streptococcus pyogenes	—	1	—	—	—	—	—	—	1
Staphylococci	25	—	—	—	—	—	—	—	25
B. pyogenes	6	—	—	—	—	—	—	—	6
B. coli	2	—	—	—	—	—	—	—	2
B. pyocyaneus	1	—	—	—	—	—	—	—	1
Tuberculosis	1	—	—	—	—	—	—	—	1
Total carried forward	374	16	69	48	—	—	1	—	508

Disease	Cattle	Horses, Mules and Donkeys	Sheep	Goats	Poultry	Bees	Rabbits	Dogs	Total
Total brought forward	374	16	69	48	—	—	1	—	508
Poultry Diseases.									
Fowl typhoid	—	—	—	—	11	—	—	—	11
Fowl cholera	—	—	—	—	39	—	—	—	39
Fowl plague	—	—	—	—	9	—	—	—	9
Coccidiosis	—	—	—	—	65	—	—	—	65
Spirochaetosis	—	—	—	—	23	—	—	—	23
Fowl diphtheria and pox	—	—	—	—	7	—	—	—	7
Visceral gout	—	—	—	—	8	—	—	—	8
Wattle disease	—	—	—	—	2	—	—	—	2
Avitaminosis	—	—	—	—	7	—	—	—	7
Leukemia	—	—	—	—	3	—	—	—	3
Proventriculitis	—	—	—	—	2	—	—	—	2
Ascites	—	—	—	—	2	—	—	—	2
Peritonitis	—	—	—	—	11	—	—	—	11
Round-worms	—	—	—	—	11	—	—	—	11
Abcess of lung	—	—	—	—	1	—	—	—	1
Tape-worms	—	—	—	—	5	—	—	—	5
Tumours and cysts	—	—	—	—	6	—	—	—	6
Prolapse of oviduct	—	—	—	—	2	—	—	—	2
Impaction of oviduct	—	—	—	—	7	—	—	—	7
Ruptured oviduct	—	—	—	—	1	—	—	—	1
Cirrhosis of liver	—	—	—	—	1	—	—	—	1
Ruptured liver	—	—	—	—	2	—	—	—	2
Ruptured blood vessel	—	—	—	—	2	—	—	—	2
Impaction of intestines	—	—	—	—	2	—	—	—	2
Abdominal hernia	—	—	—	—	1	—	—	—	1
Fowl paralysis	—	—	—	—	1	—	—	—	1
B. coli var. neapolitanum	—	—	—	—	18	—	—	—	18
S. enteritidis	—	—	—	—	2	—	—	—	2
Salmonella of the enteritidis paratyphoid group	—	—	—	—	35	—	—	—	35
Bee Diseases.									
European foul brood	—	—	—	—	—	5	—	—	5
American foul brood	—	—	—	—	—	15	—	—	15
Negative.	460	42	37	22	424	—	—	5	990
Total	834	58	106	70	710	20	1	5	1,804

Appendix No. 2.

ENUMERATION OF LIVESTOCK, 1937.

Summary by kind of Animals.

Kind of Animals	Number	Total	Grand Total
Horses, Mules, Donkeys and Camels.			149,332
Horses:		20,053	
Colts	1,220		
Fillies	1,544		
Stallions	5,587		
Mares	10,282		
Geldings	1,420		
Mules:		8,989	
Foals under 1 year	380		
Mules	8,609		
Donkeys:		92,205	
Foals under 1 year: male	6,969		
Foals under 1 year: female	10,849		
Stallions	29,164		
Mares	43,530		
Geldings	1,693		
Camels:		28,085	
Male	22,369		
Female	3,951		
Foals under 1 year	1,765		
Cattle and Buffaloes:			175,209
Cattle:		169,145	
Calves under 1 year: male	17,205		
Calves under 1 year: female	17,765		
Heifers	22,453		
Cows	74,922		
Oxen (castrated)	29,756		
Bulls (uncastrated)	7,044		
Buffaloes:		6,064	
Male	1,286		
Female	2,172		
Calves under 1 year: male	1,072		
Calves under 1 year: female	1,534		
Sheep and Goats:			570,846
Sheep:		209,422	
Male (castrated)	2,220		
Male (uncastrated)	17,557		
Female	158,061		
Lambs under 1 year	31,584		
Goats:		361,424	
Male (castrated)	6,132		
Male (uncastrated)	17,906		
Female	283,278		
Kids under 1 year	54,108		
Poultry:			2,660,092
Fowls:		2,455,949	
Hens over 1 year	905,290		
Non-laying (cocks, pullets and chicks).	1,550,659		
Ducks, Geese and Turkeys		24,571	
Ducks	12,155		
Geese	6,084		
Turkeys	6,382		
Pigeons		179,572	

ENUMERATION OF LIVESTOCK, 1937.

(Based on returns rendered by Mukhtars in July, 1937).

SUMMARY BY SUB-DISTRICTS.

Sub-District	Horses	Mules	Donkeys	Camels	Cattle	Buffaloes	Sheep	Goats	Total (Excluding Poultry)	Poultry
PALESTINE	20,053	8,989	92,205	28,085	169,145	6,064	209,422	361,424	895,387	2,660,092
Jerusalem-Bethlehem-Jericho	425	1,131	4,099	568	5,808	78	7,841	22,020	41,970	107,155
Ramallah	147	725	2,688	101	2,777	74	3,552	14,362	24,426	78,822
Hebron	249	283	6,287	2,706	12,125	127	29,929	62,159	113,865	155,311
Jaffa-Ramle	2,264	3,155	8,107	2,515	19,056	203	12,480	15,928	63,708	570,193
Gaza	707	621	10,266	4,153	11,874	5	13,716	3,654	44,996	277,891
Beersheba	2,484	7	18,902	11,476	6,048	—	42,435	22,048	103,400	131,022
Haifa	2,907	707	6,572	1,782	18,320	113	12,365	36,799	79,565	245,828
Nablus	994	328	6,765	674	13,408	7	16,452	43,159	81,787	156,708
Tulkarm	1,930	358	4,826	1,122	8,354	56	9,011	8,368	34,025	258,511
Jenin	1,505	169	5,302	697	13,956	1	9,101	22,945	53,676	148,575
Nazareth	1,078	343	3,587	271	9,161	—	9,527	14,881	38,848	151,708
Acre	1,186	191	6,235	1,099	12,002	3	3,963	43,385	68,064	127,106
Safad	1,869	389	4,546	615	19,181	5,375	15,672	28,895	76,542	105,841
Tiberias	917	371	2,356	164	8,125	5	7,778	9,847	29,563	78,950
Beisan	1,391	211	1,667	142	8,950	17	15,600	12,974	40,952	66,471

Palestine 1930	13,825	5,304	76,858	25,341	146,397	5,247	252,773	440,132	965,877	1,161,576
Palestine 1932	14,100	5,599	74,177	32,317	159,599	7,402	247,669	308,608	921,471	1,172,047
Palestine 1934	16,355	7,481	75,784	32,033	180,804	4,540	188,267	380,511	835,775	1,510,518

APPENDIX No. 4.

INCIDENCE OF ANTHRAX.

Veterinary District	Outbreaks	Animals involved	Deaths	Animals vaccinated
Total	56	14,968	221	14,140
Jerusalem	7	494	31	488
Jaffa	11	1,269	30	1,238
Gaza	1	509	1	508
Nablus	2	69	2	38
Haifa	13	3,953	91	3,842
Tiberias	22	8,674	66	8,026

Summary for 5 years.

1933/34	106	34,626	1,075	35,632
1934/35	71	15,304	538	14,766
1935/36	72	17,935	770	17,165
1936/37	68	20,913	533	20,380
1937/38	56	14,968	221	14,140

APPENDIX No. 5.

INCIDENCE OF RABIES.

Veterinary District	Dogs	Cats	Other Animals	Total
Total	93	14	25	132
Jerusalem	17	1	1	19
Jaffa	17	9	5	31
Gaza	10	—	2	12
Nablus	26	1	15	42
Haifa	4	—	1	5
Tiberias	19	3	1	23

Summary for 5 years.

1933/34	91	16	11	118
1934/35	100	22	20	142
1935/36	67	9	21	97
1936/37	85	12	25	122
1937/38	93	14	25	132

APPENDIX No. 6.

RULES MADE UNDER THE ANIMAL DISEASES ORDINANCE AND PROMULGATED DURING THE YEAR 1937/38.

Description of Rules	Palestine Gazette	
	Number	Date
1. Importation of Poultry from Great Britain Rules, 1937	684	29.4.37
2. Animal Diseases (Anthrax) Rules, 1937	698	17.6.37
3. Animal Diseases (Tick-Borne Disease) Rules, 1937	698	17.6.37
4. Export of Animals to Egypt (Certificates) Rules, 1937	701	24.6.37
5. Regarding the Importation of Stock from Hungary	707	29.7.37
6. Regarding the Importation of Stock from 'Iraq	722	30.9.37
7. Regarding the Importation of Stock from the Sudan	722	30.9.37
8. Regarding the Removal of Imported Slaughter Stock from Haifa to Ein Vared	726	7.10.37
9. Regarding the Importation of Stock from the Sudan	736	11.11.37
10. Regarding Overtime Fees payable at Haifa Port Animal Quarantine Station	744	23.12.37

REPORT OF THE CHIEF FISHERIES OFFICER
FOR THE
YEAR 1ST APRIL, 1937, TO 31ST MARCH, 1938.

SECTION I.

251. The total production of fish during 1937/38, details of which are given in Table 1, shows an improvement as compared with 1936/37, but is not up to the record figure experienced in 1935/36. The total landings for 1936/37 were low on account of the general strike and the winter sea fishery of 1935/36 is the highest on record. The proportion of the total landings produced by local fishermen has increased to 73%. The winter sea fishery of 1937/38 must be considered a failure, the total landings being 250 tons short of expectations. The poor winter fishery followed a disappointing sardine season where landings (183 tons), were approximately 180 tons short of expectation. The severe weather experienced in January, February and March is undoubtedly responsible for the poor winter fishery. Some idea of the unfavourable weather conditions at the beginning of 1938 is given by the fact that in January, 1938, fishermen could only work 12 days as compared with 18 days in 1937.

The general production of the fisheries during the last five years is shown in Table 1.

PRODUCE OF THE FISHERIES.

252. The total production of 1,700 tons, valued at £P.60,000, was made up as follows: demersal fish 976,407 kgs., pelagic fish 419,243 kgs. and lake-fish 303,194 kgs. The pelagic species and lake-fish are below average. The abundance of the different species is shown in Table 2. Of the 72 species of fish which are found on the local market only 19 marine and 9 lake species amount to 1% or over of the total annual landings. An examination of this table shows the changes which are taking place in the relevant abundance of different species on the market owing to the introduction of new methods of fishing. For example, Sultan Ibrahim (Red Mullet) has been for the last two years the most abundant sea-fish on the market. This has been due to the increase in trawling. Dawaqir has risen from 5th place to 3rd place owing to the development of the long-line fishery in the Southern District. In comparison with the sea fisheries it will be noted that there is little change in the relative abundance of lake-fish, no significant changes in the mode of fishery on the lakes having occurred in the last four years. The scientific and English names of the species listed are given in Table 3.

METHODS OF CAPTURE.

253. The quantities of fish produced by different modes of fishing are shown in Table 4. The collection of statistical records in a form which permits the quantities produced by different modes of fishing was initiated in September, 1936, and therefore a comparison with previous years is not possible. A brief description of the different modes of fishing is given below:—

Trawling. All trawling in Palestine is by motor trawlers which are from about 16 to 25 metres long. They are all wooden-built vessels, equipped with semi-Diesel or Diesel engines of 40 to 100 h.p. The net used is characterised by a very long bag and is of rather fine mesh, the mesh of the cod-end being during the year under review generally about 10 millimetres. Legislation prescribing the minimum size of mesh of these nets came into force, as is described below, in March, 1938. The depth of water in which these vessels work is generally from 30 to 60 fathoms. Trawling within the territorial waters of Palestine is prohibited by law. The average crew of a trawler is 10—12 persons. All other modes of fishing are carried out by rowing and sailing boats from 5.5 to 8.5 metres long.

Maltash is a sardine gill net used in the southern coast during May—October. This net was introduced from Egypt about four years ago.

Jarf is the beach seine and is used throughout the fisheries wherever a sandy shore permits. The net is from 150 to 300 metres long and about 7 metres deep. The ropes are 300—500 metres each long, and the number of persons employed varies from 10 to 14. This net is used all the year round.

Mubattan is a trammel net, the size of which varies in different fisheries. In the lake fisheries the trammel is of large mesh, about 1.5 metres deep. Each boat carries about 200 metres of net. In the sea fisheries trammel nets which are deeper and of smaller mesh, are also used.

Lampara is a special net worked in conjunction with lights for taking sardines. It essentially consists of a ring-net with a horizontal portion and is used from May to October.

Bashlula is a large-mesh gill net used for the winter fishery of Musqar and Ghunbar which appear inshore in large shoals. It is used from December to March.

Shabaka is a cast net worked by a single man from the shore and also in Lake Tiberias from a boat during the lake-sardine fishery.

Sharak is a long line, generally about 200 metres, each of which has 100—250 hooks size 5 or 6. The most important long-line fishery is in the south of Palestine, each boat setting 4-5 lines. The most popular bait are fresh sardines. The long-line fishery is carried on all the year round.

Tahwiq is a special form of trammel with a horizontal portion floating on the surface of the sea, which is used during winter for encircling the inshore shoals of Balamida, Buri and Sarghus. It is used from October to January.

254. When comparing the values of the fish produced by each method of fishing, it is interesting to note that a high average value of the fish is produced by the Mubattan and Bashlula fishery. In general trawling, long-line and Jarf fishermen do not alter their mode of fishing throughout the year. The inshore fishermen, on the other hand, vary their mode of fishing according to the season. It is clearly a matter of great importance to determine the relationship between the yield and the expenditure required to produce it by each of the different methods of fishing. Statistics over a sufficient period are not yet available to reduce the production into terms of net profit per man per day. The average gross takings per boat or net/day are given below under the different fisheries and details of costs are now being collected. Even with the present records, however, it is clear that so-called primitive methods produce a better-quality fish than the trawlers, and for this reason it has been the policy of the Fisheries Service to encourage the use of marine motors in connection with the inshore fishery to increase the production per boat per day.

THE TRAWL FISHERY.

255. The trawl fishery is carried out by local trawlers and foreign trawlers. Both classes of trawlers operate on the fishing grounds outside the 3 miles limit in the neighbourhood of Haifa and Jaffa. As will be seen from Table 1, the total quantity of fish landed by foreign trawlers has decreased. This has been due to (1) the severe weather during the winter which considerably curtailed the range of operation of the vessels and (2) enforcement of fisheries legislations limiting the minimum size of fish to be landed, and minimum size of mesh of nets to be used. Foreign trawlers operating off Palestine require a permit under Rule 3(1) of the Fisheries Ordinance in order to land their catch. At the beginning of the year under review 18 trawlers were in possession of such permits, in 1938 only 8 trawlers renewed their permits. The prohibition of landing undersized fish has markedly reduced the landings of foreign trawlers, the weight of fish landed per boat per day having decreased 60% on this account. The local trawlers have experienced a difficult and trying year. The lack of expert knowledge, the shortage of supply of fishing gear, the absence of a slipway for the maintenance of vessels have all participated in lowering gross taking and net earnings. For these reasons an average of 3 only out of the 8 trawlers of local registry were in commission per month.

256. As regards average taking and gross earnings per working day of the foreign and local trawlers, the foreign trawlers averaged 326 kgs. valued at LP.9.285 mils per boat per day, whereas the local trawlers averaged 344 kgs. valued at LP.9.404 mils. Taking into consideration

the small average size of the local trawler, the work of the local vessels must be considered as most satisfactory. However, it must be noted that foreign vessels averaged 16 working days per month, whereas the local averaged only 9. Undoubtedly, the most serious difficulty which the local trawlers have experienced has been the difficulty of obtaining adequate supplies of fishing gear on reasonable terms, and in this respect they are very badly placed in comparison with the foreign vessels.

OFFSHORE SURFACE FISHERIES.

257. This class of fishing is for the first time shown separately as prior to the summer of 1934 no offshore surface fishing was carried out due to lack of suitable gear to exploit such grounds. In 1934 Syrian fishermen introduced the Lampara net and after successful experiments four nets were acquired locally, but their use was not allowed until late in 1936 when rules regulating the use of Lampara nets outside the three miles limit were enforced. During the year under review the total number of these nets amounted to eight; six at Haifa, one at Acre and one at Zib. The total quantity landed was 63,887 kgs., all sardines, valued at £P.1,174, or 4.6% and 2.2% of the total quantity and value of sea-fish landed during the year respectively. The average gross landings and earnings per boat per working day amounted to :—

Centre	Kgs.	LP. mils
Haifa	241	4.311
Acre	286	7.526
Zib	300	5.000

THE INSHORE FISHERY.

258. The inshore fishery produced 42% of the total weight of sea-fish landed during 1937/38 and and 49% of the total value. The fact that any one boat may engage in several different modes of fishing during the year has made the collection of full statistics a difficult matter. The following figures give the earnings per boat and/or net day during the winter season 1937/38. The approximate number of fishermen per boat or net is also shown and the number of days per month worked. Great caution must be observed however in deducing the net earnings per man per month because not only the cost and useful life of the different nets varies greatly but the quality of the labour varies also. Thus for example 10 or 12 of the persons engaged in working a Jarf net are unskilled labourers.

Fishing Method	Kgs. per net or boat day	LP. per net or boat day	Number of men per net or boat	Average number of days per month worked
Jarf	63	2.658	16	12
Mubattan	14	0.751	4	9
Tahwiq	33	1.952	16	6
Bashlula	19	1 055	3	8
Shabaka	3	0.181	1	8
Lines	23	1.313	4	18
Maltash	52	1.123	4	6

PLACE OF CAPTURE.

259. Collection of data under this heading is being made with a view to determine the productivity of the different fishing grounds and the intensity with which they are worked. This has proved as was expected very difficult owing to the scattered condition of the industry and the small staff of the Fisheries Service. However, the necessary data is gradually accumulating. Certain general conclusions can safely be made from the date available.

(1) The long-line fishing grounds situated in 60 fathoms west of Askalon are the most productive on the coast.

(2) The trawl fishing grounds of the South have proved markedly richer than those of the North.

(3) The Jarf, Tahwiq and Shabaka do better in the North than in the South.

LANDINGS AT PORTS.

260. The percentage of the total sea-fish landings at each centre was as follows :—

Fishing Centre	1935/36		1936/37		1937/38	
	Weight	Value	Weight	Value	Weight	Value
	%	%	%	%	%	%
Total Northern District	46.7	45.2	54.7	49.3	36.7	36.9
Haifa	38.8	34.8	49.1	40.1	31.4	29.8
Acre	4.9	6.7	3.5	5.9	3.8	4.9
Tantura	1.0	1.7	1.2	1.2	1.0	1.5
Zib	2.0	2.0	0.9	2.9	0.5	0.7
Total Southern District	53.3	54.8	45.3	50.7	63.3	63.3
Jaffa	41.5	41.7	37.9	41.4	50.5	50.6
Jura	6.2	7.1	4.9	5.8	8.3	8.0
Gaza	5.6	6.0	2.5	3.5	4.5	4.5

261. As compared with the immediate past two years it will be seen that there has been a serious decline in both the quantity landed and value realised at Haifa and Zib in the northern area as a result of the partial failure in the landings of foreign trawlers at the former and lack of tackle at the latter. As compared with last year the yield from Lake Tiberias shows a decrease of 1,922 kgs. and LP.973, and a decrease of 13,268 kgs. and LP.945 from Lake Hula. The decline in production of Lake Tiberias is slight but it must be emphasised that the total production of 250 tons is unsatisfactory for this fishery and that steps must be taken to safeguard its stock of fish. However, the unsual high level of the lake during the beginning of 1938 will most probably favourably react on the fishery in 1939.

FISHERMEN.

262. The total number of fishermen licensed during 1937/38 is shown in Table 5. A general fishing licence covers all modes of fishing, a special licence is restricted to persons taking fish with a cast net from the shore. This table includes neither the crew of foreign fishing vessels working from Palestinian ports nor does it include fishermen employed under an exclusive licence nor shore labourers employed in connection with Jarf nets. The total number of persons directly engaged in fishing is estimated as follows :—

Licensed fishermen, Northern Area	537
Licensed fishermen, Southern Area	530
Licensed fishermen, Eastern Area	148
Fishermen employed under the exclusive licence granted to the Lake Hula Concessionaires	15
Fishermen engaged in fishing private waters	17
Crews of foreign fishing vessels	180
Shore labourers	200
Total	1,627

The number of persons other than fishermen directly employed in the industry, i.e. fish merchants, salesmen and hawkers is estimated at 365.

FISHING VESSELS.

263. The total number of vessels registered as fishing vessels was at the end of the year 386. This as compared with the figure 461 for 1936/37 shews an apparent decrease of 16%. A recent check has shown, however, that a number of vessels shewn on the register had been destroyed or used for purposes other than fishing. On the other hand under existing legislation any vessel may be used for fishing whether it is registered as a fishing vessel or not. The total registered tonnage of boats engaged in fishing is approximately 400 tons.

CASUALTIES AND LOSS OF LIFE.

264. The following casualties have occurred during the year :—

August, 1937 — 1 fisherman drowned while setting a net near Jura.
1 fisherman attacked by a shark while fishing near Gaza.

September, 1937 — Italian trawler "Oriente" disabled near Nathanya by failure of engine, salvaged by the Government fishing boat.

January, 1938 — 4 Bashlula nets and 4 baskets of lines lost owing to heavy weather.

February, 1938 — 3 Maltash nets, 4 baskets of lines and 3 boats damaged by heavy weather.

IMPORTS AND EXPORTS.

265. Table 6 shows the total quantities and values of fish by classes imported into and exported from Palestine during 1937/38 as compared with each of the years 1933/34—1937/38. The increase in each category as compared with 1936/37 is shown by the following figures :—

	Weight		Value	
	Kgs.	Per cent.	LP.	Per cent.
Total fish all kinds (*)	+315,242	+ 6.5	+ 3,878	+ 2.3
Fish in tins	—196,600	— 5.2	—10,527	—17.8
Fish in brine, dry, salted and smoked	+147,541	+ 7.6	+ 3,877	+ 9.2
Fish, fresh and frozen (*)	+364,291	+22.9	+10,528	+1.58

The large imports of fresh fish which compete directly with the local production are noteworthy. Such imported fresh fish amounts to 50% of the total weight of fresh fish consumed in the country and 53% of the value. With the exception of the small quantity of fresh fish from Syria and Lebanon, all such imported fish pays an import duty of 5 mils per kg. The large quantities of fresh fish from Iraq, which have averaged 439 tons valued at £P.17,000 over the past four years, is notable. The imports of fish in brine have increased. Such fish, principally herrings is largely processed in local factories, ten such factories smoking and canning fish are now working. The exports of fresh fish principally to Syria, are below average. These exports in past years have consisted of small fish (the taking of such fish is now prohibited by law) and sardines, the fishery of which during 1937 was a failure.

PRICES.

266. The average price received by the producers at the different ports is shown by the following figures :—

Fishing Centre	1933/34	1934/35	1935/36	1936/37	1937/38	Average
	Mils per kg.	Mils per kg.	Mils per kg.	Mils per kg.	Mils per kg.	Mils per kg.
Acre	57	50	46	46	48	50
Haifa	41	35	29	40	35	32
Zib	51	35	35	41	53	41
Tantura	59	58	57	46	53	55
Jaffa	40	40	43	38	37	35
Jura	31	37	39	33	36	35
Gaza	38	40	36	37	38	38
Tiberias	—	20	27	30	27	27
Hula	—	16	22	27	16	21
Average all centres	40	33	32	28	35	33

The increase in the average price is attributable to two causes, the failure of the sardine fishery, sardines commanding a low price and therefore a good sardine fishery lowers the annual average price of fish and, secondly, the prohibition of the sale of very small fish formerly landed by trawlers and selling at less than 10 mils per kg.

(*) This figure does not include fish landed from foreign fishing vessels.

267. Adequate figures have not yet been collected to establish the average retail price of the different classes of fish, figures collected by the Office of Statistics not distinguishing between the locally-produced and imported fresh fish. The price paid by the consumer is, however, undoubtedly high and at least 100% in advance of the producer's price. The subject of marketing of fish is receiving close attention and proposals for the establishment of central wholesale markets are under consideration.

SECTION II.

THE FISHERIES SERVICE.

268. The Fisheries Service was maintained during 1937/38 on a basis similar to that laid down in 1936/37.

STAFF.

269. A Statistical Fisheries Officer was appointed on the 1st June, 1937. Three Fishery Guards were appointed for the protection of the lake fisheries in October, 1937. The staff of the Fisheries Service at the end of March, 1938, was as follows :—

Head Office, Haifa :	Chief Fisheries Officer. Statistical Fisheries Officer. Clerk. Shorthand Typist. Messenger.
District Office, Haifa :	District Fishery Officer. One Guard.
District Office, Jaffa :	District Fishery Officer. Two Guards.
District Office, Tiberias :	District Fishery Officer. Four Guards.
Boat Crew :	One Mechanic (seconded from the Department of Customs, Excise and Trade). One Senior Fisherman. One Junior Fisherman (temporarily recruited as required).

PROTECTION.

270. The work of the Fisheries Service in suppressing illegal fishing such as the use of explosives, small-mesh nets, destruction of undersized fish, trawling in prohibited areas, etc., has been maintained during this year. The number of persons chraged for contraventions of the Fisheries Ordinance and number of convictions obtained are shewn in Table 7. The Fisheries Service, however, is as yet inadequate to suppress the illegal destruction of fish. In particular the destruction of fish by explosives is as yet far from being suppressed. Four hundred and twenty kilometres, 220 being coast and 200 inland, of coast-line have to be patrolled by a total field personnel of 10 persons. The times at which the various contraventions were detected, were as follows :—

Fishing with explosives,	Dawn.
Fishing without a licence,	Dawn.
Fishing in a prohibited area,	1.00 A.M.
Trawling within the three-miles limit,	4.00 P.M.
Using Lampara net within the three-miles limit,	2.00 A.M.

There are 19 principal offences under the Fisheries Ordinance. Cases were lodged for trial of contraventions of 10 of these offences.

271. Special rules, referred to below in Section IV have been made for the protection of the Fisheries of the Sea of Galilee (Lake Tiberias). Further steps to preserve the stock of fish in the lake will be taken as soon as practicable.

DEVELOPMENT.

272. In order to make effective contact with as large a number of fishermen as possible one of the first steps of the Service has been to encourage the formation of local fishermen's

committees. These committees, consisting of 3 to 7 representative Rais (head) fishermen, have been of considerable value in connection with the development work of the Service. Most encouraging results have been obtained by small-scale demonstrations and experiments. The principal methods of promoting the development of the fishing industry pursued during 1937/38 have been as follows :—

(1) Experiments to determine the best types of nets for local conditions.

(2) Demonstrations of new methods of fishing and mthods of preserving nets.

(3) Demonsrations of the value of a motor fishing boat in the inshore fishery.

(4) Negotiating on behalf of the fishermen for the revision or removal of rules and regulations imposing undue hardship or restriction on the industry.

(5) Promotion of the formation of co-operative societies and assisting fishermen to find capital for the development of their industry.

(6) Canning experiments, and pond-fish culture.

A detailed account of these developments would necessitate a voluminous report. Certain outstanding results, however, demand recording.

NET EXPERIMENTS.

273. *Trawl Nets.* Experiments were carried out to determine the most effective pattern of trawl, four trawls of different materials and pattern were tried out. With the co-operation of the National Fishing Company of Jaffa and the Palestine Fishing Company of Haifa, whose assistance is hereby gratefully acknowledged, experiments have been conducted on a commercial scale. The conclusion from these experiments are :—

(1) That manilla trawl twine, 250 for wings, etc., 200 for cod-end, is superior to either hemp or cotton for trawl nets.

(2) The wings, baitings and belly should be of not less than 3 inches mesh (i.e. 37 mms. knot to knot measurement). The cod-end should be 1½" mesh (20 mms. knot to knot measurement).

274. *Gill Nets.* Experiments with small lengths of gill net of various mesh suggested that a mesh of 22.5 mms. knot to knot (1¾" mesh) would give good results. 375 metres of net, 3 metres deep, 22.5 mms. knot to knot, of 60/6 Egyptian cotton were obtained and have been worked from the Government Demonsration Boat with consistently favourable results. It is particularly efficient for taking Mallita (*Sphyraena sphyraena*). This net has aroused considerable interest among the fishermen.

275. Demonstration of ring-net fishing and Danish seine have been given at various localities.

276. Plans for the construction in Palestine of motor fishing boats modeled on the Demonstration Fishing Boat are well ahead. It is expected that two such vessels will be built in 1938, one smaller and one larger.

277. Permission for line fishing from the breakwaters at Haifa and Jaffa have been granted. In response to representations by the Fisheries Service arrangements have been made whereby sailing fishing boats will be permitted to use Haifa Harbour.

278. The difficulties experienced by fishermen in securing financial support in starting new ventures have been great. It is certain that ample financial support is available to any venture that can show a reasonably favourable balance sheet after 3 or 6 months.

279. Samples of sardines suitable for canning or smoking have been supplied to interested factories. The general failure of the sardine fishery, however, interfered with these experiments. Preliminary experiments to utilise the edible turtles available in fair quantities were begun during the year.

280. The establishment of carp ponds has been freely advocated by the Fisheries Service. In response to a request a scheme for such ponds in the river 'Asi, Tel Amal, Beisan Sub-District, was prepared and the pond stocked early in 1938. The growth of the fish has been very good and the experiment is likely to have far-reaching results.

FISHERIES COMMITTEE.

281. By the beginning of the year it was felt that the organisation of the Fisheries Service was sufficiently developed to make the appointment of a public committee useful. Accordingly a Fisheries Committee under the General Agricultural Council was formed to consider and advise Government on proposals for the improvement and development of the fishing industry.

282. Two meetings have been held and the committee have recommended to Government proposals for the improvement and development of the sea fisheries in particular. These recommendations are as follows :—

(1) The strengthening of the Fisheries Protection Service.

(2) The development of wholesale fish markets.

(3) Creation of a Government loan fund to the fishing industry.

(4) The encouragement and development of facilities for the maintenance and repair of fishing vessels at ports.

(5) The provision by Government of expert practical instructions to fishermen.

(6) The promotion of scientific research into the problems of the fishing industry.

(7) Removal of customs duties on fishing materials.

283. A special sub-committee was appointed to examine and report on the general financial resources and requirements of the fishing industry.

RESEARCH.

284. During the year under review the only research possible has been into immediate and practical questions. A considerable confusion has existed in the past as a result of incorrect identification of certain of the commercial species of fish available. 68 species have been identified, the more common species being shown in Table 3. An investigation into the spawning seasons and migrations of the principal species in the Sea of Galilee (Lake Tiberias) has been begun with a view to protecting the stock of fish by stopping fishing during the spawning season. From the condition of the fishing it is clear that the Sea of Galilee (Lake Tiberias) should be restocked. The indigenous species are of slow growth and the question whether such species as carp can be introduced without upsetting the indigenous fauna has been closely studied. An experiment of keeping carp with the various indigenous species of the lake has been in progress for some time. This experiment has been made possible by the courtesy of Father Tapper of Tabgha who kindly placed a pond at the disposal of the Service. The conclusions from this experiment are that the carp thrive well and do not destroy the eggs or young of other species.

INTERNATIONAL COMMISSION FOR THE SCIENTIFIC EXPLORATION OF THE MEDITERRANEAN SEA.

285. The Chief Fisheries Officer, representing the Government of Palestine, attended the session of the International Commission for the Scientific Exploration of the Mediterranean Sea held at Paris in October, 1937.

The deliberation of the Commission included a study of the trawling grounds in the Mediterranean, the biology of the grey mullet (Buri) and a number of other subjects of practical importance to the fisheries of Palestine.

A suggestion was put forward by the Egyptian delegate for a scientific expedition to the Eastern Mediterranean. This proposal is of immediate interest to the fisheries of Palestine and will be closely followed.

FISHERMEN'S CHARTS.

286. By the courtesy of the Hydrographer to the Admiralty, the Government Printer and the Commissioner for Lands and Surveys, Jerusalem, a special large-scale chart clearly showing the different types of bottom as well as the depths has been prepared by the Fisheries Service. At present one sheet, Ras en Naqura to Jaffa has been completed, Jaffa to Gaza and Gaza to El Arish are under preparation.

SECTION III.

LICENCES AND REVENUE.

287. The Fisheries Service has, since the enactment of the Fisheries Ordinance, 1937, taken over the issue of fishing licences which previously were issued by the Department of Customs, Excise and Trade. Permits to land fish and fishing licences of the following kinds are issued :—

(1) General Fishing Licence, permits bearer to fish by all modes of fishing in all public waters, fee 500 mils.

(2) Special Fishing Licence, permits bearer to fish by cast net only in all public waters, fee 100 mils.

(3) Exclusive Fishing Licence, grants to licensee or his employees the exclusive right to take fish in a prescribed area. Licence fees vary.

(4) Licence to Take Sponges, licence fee LP.5.

(5) Permit to Land Fish, permits landing of fish direct from foreign fishing vessels provided the fishing gear and fish taken conform to the rules in force in Palestine. Fee 500 mils.

The total number of licences issued and revenue collected, as compared with last year are as follows :—

Kind of Licence	1937/38		1936/37	
	Number	LP. Mils	Number	LP. Mils
General Fishing Licence	845	422.500		
Special Fishing Licence	370	37.000		
Exclusive Fishing Licence	1	—.500		
Permit to Land Fish	26	13.000		
Licence to Take Sponge	—	—		
Total	1,242	473.000	561	280.500

The increase in the number of licences and revenue collected is apparent and it is anticipated that a further increase will result in the forthcoming year, this not only being effected by the growth of the fishing industry but also due to the closer contact with the fishermen resulting from the issue of licences by the Fisheries Service.

SECTION IV.

LEGISLATIVE CHANGES.

288. Rules made during 1937/38 under the Fisheries Ordinance, 1937, are shown on Table 8.

A. CRAIG-BENNETT,
Chief Fisheries Officer.

TABLE 1.

TABLE SHOWING COMPARATIVE WEIGHTS, VALUE AND AVERAGE PRICE OF SEA FISH AND LAKE FISH LANDED BY LOCAL AND FOREIGN FISHERMEN DURING EACH OF THE YEARS 1933/34—1937/38.

	Year	Total landings	Percentage based on total landings	Value	Average price per Kg.
		Kgs.	%	£P.	Mils
1. Sea-fish landed by local fishermen	1933/34	889,349	81	36,576	41
	1934/35	879,556	57	33,170	38
	1935/36	1,168,220	59	40,981	35
	1936/37	668,453	42	26,063	39
	1937/38	937,504	55	39,020	42
2. Lake-fish landed by local fishermen	1933/34	—	—	—	—
	1934/35	211,705*	14	4,011*	19
	1935/36	338,448	17	8,703	26
	1936/37	318,384	20	9,482	30
	1937/38	303,194	18	7,564	25
3. Total fish landed by local fishermen	1933/34	889,349	81	36,576	41
	1934/35	1,091,261	71	37,181	34
	1935/36	1,506,668	76	49,684	33
	1936/37	986,837	62	35,545	36
	1937/38	1,240,698	73	46,584	38
4. Sea-fish landed by foreign fishermen	1933/34	204,121	19	7,147	35
	1934/35	450,260	29	14,151	31
	1935/36	471,762	24	14,223	30
	1936/37	617,292	38	9,342	15
	1937/38	458,146	27	13,037	28
5. Total sea-fish landed by local and foreign fishermen	1933/34	1,093,470	100	43,723	40
	1934/35	1,329,816	86	47,321	35
	1935/36	1,639,982	83	55,204	33
	1936/37	1,285,745	80	35,405	28
	1937/38	1,395,650	82	52,057	37
6. Grand total of all fish landed	1933/34	1,093,470	100	43,723	40
	1934/35	1,541,521	100	51,332	33
	1935/36	1,978,430	100	63,907	32
	1936/37	1,604,129	100	44,887	28
	1937/38	1,698,844	100	59,621	35

*Actual data collected during period 1.10.34—31.3.35

TABLE 2.

COMPARATIVE TABLE SHOWING THE PERCENTAGE AND ORDER OF PRIORITY OF 19 SEA AND 9 LAKE SPECIES; THE TOTAL LANDINGS OF WHICH CONSTITUTE MORE THAN 1% OF THE GRAND TOTAL.

A. Sea-Fish.	Percentage					Order of Priority				
	33/34	34/35	35/36	36/37	37/38	33/34	34/35	35/36	36/37	37/38
	%	%	%	%	%					
Sardina	17.9	24.6	26.8	7.8	13.1	1	1	1	4	2
Buri	17.6	11.4	10.2	6.5	6.3	2	4	4	6	5
Sultan Ibrahim	13.4	20.3	22.1	23.9	25.2	3	2	2	1	1
Jarbiden	9.8	16.5	11.9	14.9	5.8	4	3	3	2	7
Dawaqir	8.4	5.7	5.9	8.9	9.6	5	5	5	3	3
Musqar	5.4	5.3	8.3	7.7	8.7	6	6	5	5	4
Sarghus	4.7	1.7	1.7	1.4	2.3	7	9	8	14	9
Ghunbar	3.4	2.8	2.1	5.4	5.9	8	7	6	7	6
Kalb el Bahr	2.3	0.8	1.2	2.8	1.3	9	15	12	10	12
Marmur	2.2	2.0	1.7	0.7	2.0	10	8	9	17	10
Bursh	1.6	0.9	1.3	2.5	3.0	11	14	11	11	7
Farriden	1.4	1.1	1.8	1.5	1.6	12	12	7	12	11
Intyas	1.0	1.1	0.9	0.6	0.3	13	13	15	18	17
Saqqaya	1.0	1.7	1.6	5.1	3.0	14	10	10	8	6
Ghubbus	0.7	0.7	—	1.5	0.9	15	16	—	13	15
Balamida	0.7	0.6	0.9	1.0	0.8	16	17	14	15	16
Samak Musa	0.5	1.2	1.1	0.9	1.3	17	11	13	16	13
Mallita	—	—	—	—	1.0	—	—	—	—	18
Other species (Unclassified)	—	—	—	4.9	2.6	—	—	—	9	8
B. Lake Fish.										
Barbut	—	2.1	1.5	0.7	2.0	—	7	8	9	8
Haffafi	—	8.1	6.6	3.5	3.0	—	4	6	6	6
Kersin	—	27.3	20.6	26.1	21.0	—	2	2	1	2
Qishra	—	5.1	9.4	10.8	8.0	—	5	5	5	5
Musht Abyad	—	10.1	13.6	18.8	15.0	—	3	4	3	3
Musht Lubbad	—	—	0.7	2.6	1.0	—	9	9	7	9
Musht 'Uqqar	—	3.9	16.1	12.3	10.0	—	6	3	4	4
Musht Marmur	—	0.5	2.8	2.3	3.0	—	8	7	8	7
Sardina	—	42.5	26.1	22.4	34.1	—	1	1	2	1

TABLE 3.

NOMENCLATURE.

TABLE SHOWING LOCAL, SCIENTIFIC AND ENGLISH EQUIVALENT OF FISH MENTIONED IN THIS REPORT.

LOCAL NAME	SCIENTIFIC EQUIVALENT	ENGLISH EQUIVALENT
Arfida	Tylosurus imperialis (Rafin)	Half-beak
At'ut	Trachinotus glaucus (L.)	Blue fish
Jarbiden	Pagellus erythrinus (L.)	Red Bream
Sultan Ibrahim	Mullus surmuletus (L.)	Red Mullet
Mallita	Sphyraena sphyraena (L.)	Small Barracuda
Mannurin	Oblada melanura (L.)	Sea-bream
Sarghus	Diplodus sargus (L.)	Sea-bream
Sarghus Haddadi	Diplodus fasciatus (C. & V.)	Sea-bream
Fariden	Pagrus ehrenbergi (C. & V.)	Sea-bream
Musqar	Sciaena equila (Lacep.)	Maigre
Qarras	Siganus nebulosus (Quoy & Gaim)	—
Ghunbar	Pomatomus saltatrix (L.)	Skipjack
Sulbi	Box salpa (L.)	Sea-bream
Balamida	Euthynnus alletteratus (R.)	Bonito
Intyas	Seriola dumerilii (Risso)	Yellow-tail
Marmur	Pagellus mormyrus (L.)	Sea-bream
Turghullus	Decapterus rhonchus (Geoffr.)	—
Ghubbus	Box boops (L.)	Sea-bream, Bogue
Sardina Rafia'	Sardinella eba (C. & V.)	Sardine
Sardina Mabrum	Sardinella aurita (C. & V.)	Sardine
Buri Kabbani	Mugil cephalus (Cuv.)	Grey Mullet
Luqquz	Epinephelus aeneus (Geoffr.)	Jaffa Cod
Haffash	Epinephelus alexandrinus (C. & V.)	Sea-perch
Samak Musa	Solea solea (L.)	Sole
'Uqqar (Musht)	Tilapia zillii (Gervais)	St. Peter's fish
Musht Marmur	Tilapia Magdalenae (Lortet)	St. Peter's fish
Kalb (Musht)	Parachromis sacer (Günth.)	Cichlid
Balbut	Clarias lazera (C. & V.)	Catfish
Kersin	Barbus longiceps	Barble
Qishra	Barbus canis (C. & V.)	Barble
Haffafi	Varicorhinus damascinus (C. & V.)	—
Sardina (Fresh-water)	Alburnus sellal, Heck.	Bleak
Musht Abyad	Tilapia galilaea (Artedi)	St. Peter's fish
Musht Lubbad	Tilapia nilotica (L.)	St. Peter's fish
Musht 'Addadi	Tilapia zillii (Gervais)	St. Peter's fish
Bursh	Myliobatis bovina (Geoffr.)	Skate
Skumbli	Pneumatophorus colias (L.)	Mackerel
Tarakhun	Caranx fusus (Geoffr.)	Horse-mackerel
Ajaj	Sparus auratus (L.)	Golden Bream
Saqqaya	Merluccius merluccius (L.)	Hake
Isfirna	Sphyraena sphyraena (L.)	Large Barracuda

TABLE 4.

STATEMENT SHOWING THE TOTAL QUANTITY AND VALUE OF SEA AND LAKE FISH LANDED BY EACH MODE OF FISHING DURING THE YEAR 1937/38.

MODE OF FISHING	WEIGHT		VALUE	
	Kgs.	Per cent.	LP.	Per cent.
1. *Total Sea Fisheries*	1,395,650	100	52,057	100
Trawling—foreign	458,146	33	13,036	25
Trawling—local	101,230	7	2,795	6
Maltash	32,083	2	684	1
Jarf	348,930	25	13,825	27
Mubattan	28,278	2	1,658	3
Lampara	63,887	5	1,174	2
Bashlula	73,237	6	4,209	8
Shabaka (Cast nets)	61,784	4	3,113	6
Lines	187,971	13	9,455	18
Tahwiq	40,104	3	2,108	4
2. *Total Lake Fisheries*	303,194	100	7,564	100
Jarf	86,923	29	3,186	41
Mubattan	88,795	29	3,085	41
Lines	11,872	4	461	6
Shabaka (Cast nets)	76,889	25	734	10
Sardina nets	38,715	13	148	2

TABLE 5.

TABLE SHOWING THE NUMBER OF LICENSED FISHERMEN BY CATEGORIES, CLASSES AND FISHING CENTRES, 1937/38.

FISHING CENTRE	TOTALS					GENERAL-LICENCE FISHERMEN					SPECIAL-LICENCE FISHERMEN				
	Total all classes	Total owner whole-time fishermen	Total owner part-time fishermen	Total employee whole-time fishermen	Total employee part-time fishermen	Total	Owners whole-time fishermen	Owners part-time fishermen	Employed whole-time fishermen	Employed part-time fishermen	Total	Owners whole-time fishermen	Owners part-time fishermen	Employed whole-time fishermen	Employed part-time fishermen
Grand Total	1,215	667	156	329	63	845	428	50	306	61	370	239	106	28	2
Total Northern Area	537	249	111	123	54	397	186	37	122	52	140	63	74	1	2
Acre	107	52	25	11	19	86	40	16	11	19	21	12	9	—	—
Haifa	336	169	46	91	30	272	135	17	91	29	64	34	29	—	1
Tantura	74	23	27	20	4	37	10	3	20	4	37	13	24	—	—
Nathanya	20	5	13	1	1	2	1	1	—	—	18	4	12	1	1
Total Southern Area	530	364	18	143	5	348	190	11	142	5	182	174	7	1	—
Tel Aviv	18	15	2	1	—	12	11	—	1	—	6	4	2	—	—
Jaffa	252	156	9	83	4	164	72	6	82	4	88	84	3	1	—
Jura	147	114	1	31	1	100	68	—	31	1	47	46	1	—	—
Gaza	113	79	6	28	—	72	39	5	28	—	41	40	1	—	—
Total Eastern Area	148	54	27	63	4	100	52	2	42	4	48	2	25	21	—
Tiberias	126	53	6	63	4	98	51	1	42	4	28	2	5	21	—
Hula, Jordan River	22	1	21	—	—	2	1	1	—	—	20	—	20	—	—

TABLE 6.

TABLE SHOWING THE QUANTITIES AND VALUES OF FISH, BY CLASSES, IMPORTED INTO AND EXPORTED FROM PALESTINE DURING EACH YEAR, 1933/34—1937/38.

YEAR	Total imports all classes		IMPORTS						EXPORTS		Excess of Imports over Exports of Fresh Fish	
			In tins		In brine, dry, salted and smoked		Fresh and Frozen		Fresh and Frozen			
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	Kgs.	£P.	Kgs.	£P.	Kgs.	£P.	Kgs.	£P.	Kgs.	£P.	Kgs.	£P.
1933/34	3,214,845	109,988	723,877	33,092	1,194,842	26,177	1,296,126	50,719	47,975	1,092	1,248,151	49,627
1934/35	4,567,027	155,990	1,275,485	56,704	1,724,583	40,735	1,566,959	58,551	118,863	4,119	1,448,096	54,432
1935/36	4,922,815	169,244	1,374,634	64,492	1,773,320	39,025	1,774,861	65,727	174,142	5,450	1,600,719	60,277
1936/37	4,814,302	167,955	1,291,124	59,274	1,933,957	42,116	1,589,221	66,565	150,032	4,716	1,439,189	61,849
1937/38	5,126,337	171,874	1,090,756	48,749	2,082,019	46,030	1,953,562*	77,095*	40,544	1,476	1,913,018	75,619

* Includes fish landed by foreign trawlers since September, 1937.

TABLE 7.

NUMBER OF CONTRAVENTIONS MADE DURING THE YEAR 1937/38.

	Article	Number of cases	Total persons charged	Struck out, Acquitted and Discharged			Convicted		
				Struck out	Acquitted	Discharged	Convicted	Bound	Warned
Fishing by dynamite or poisonous bait	10 (3) A & B	14	38	—	10	4	21	—	3
Fishing without a licence	10 (1) A	33	60	—	12	—	48	—	—
Using illegal methods for driving fish to nets	4 (5)	3	11	—	1	—	10	—	—
Attempting to fish without a licence	4	1	3	—	—	—	—	3	—
Fishing in the estuary of a river	4 (3)	2	3	—	—	—	3	—	—
Fishing in prohibited area	8 (1)	12	24	—	1	—	23	—	—
Landing undersized fish	6	7	15	—	1	1	13	—	—
Using Lampara net within the three-miles limit	4 (2)	7	66	—	33	—	33	—	—
Refusal to exhibit licence	10 (5)	1	1	—	—	—	—	—	1
Trawling within the three-miles limit	10 (2)	1	1	—	—	—	1	—	—
Total		81	222	—	58	5	152	3	4

TABLE 8.

RULES MADE AND PROMULGATED UNDER THE FISHERIES ORDINANCE DURING THE YEAR 1937/38.

DESCRIPTION OF RULES	PALESTINE GAZETTE	
	No.	Date
1. *Fisheries (Amendment) Rules, 1937.*	697	10.6.37
i. Prohibiting the use of Mubattan and Tahwiq nets at Lake Tiberias between the hours of one hour after sunrise and one hour before sunset.		
ii. Provision for the issue of fishing permits to take fish from the main breakwater at Haifa		
2. *Sponge Fishery Rules, 1937.*	698	17.6.37
To provide for the grant of exclusive licences to take sponges and to regulate sponge fishing		
3. *Fisheries (Amendment) Rules No. 2, 1937.*	726	7.10.37
Provision for the issue of permits to take fish from the reef of rocks at Jaffa Port		
4. *Exclusive Licence to take Fish.*	702	1.7.37
To provide for the issue of exclusive fiishing licence to take fish in the Hula Concession Area		

REPORT OF THE CHIEF HORTICULTURAL OFFICER

FOR THE

YEAR ENDED 31ST MARCH, 1938.

STAFF.

289. Mr. J.M. Taylor resigned his appointment as Chief Fruit Inspector on the 11th February, 1938, and Mr. R.E. Hunter, B.Sc., was appointed on the 19th November, 1937, in his stead. Mr. A. Grasovsky, M.B.E., acted whilst Mr. Taylor was on leave prior to resignation. Messrs. Rapoport and Shiff acted as Senior Horticultural Officer and Horticultural Instructor respectively during Mr. Grasovsky's acting appointment. An increase in the junior personnel of the Fruit Inspection Service was necessary. One additional permanent Assistant Fruit Inspector was appointed, 10 additional temporary inspectors and more packers, carpenters and guards as required.

THE CITRUS INDUSTRY.

AREA UNDER CITRUS.

290. The area under Citrus at March 31st 1938, was estimated at 299,500 dunums, an increase of 1,500 dunums for the year. New plantings were mainly confined to Valencia Late and Jaffa (Shammuti) oranges and Eureka lemon. Grapefruit planting ceased and there was a tendency to reduce the area by top-working the trees to other varieties. The general survey of Citrus groves was continued and a total area of 215,134 dunums has now been completed, comprising 173,490 dunums of orange groves, 25,851 grapefruit and 15,793 other Citrus.

CITRUS CROP AND ITS DISTRIBUTION. (See Table 1).

291. The weather was generally favourable at blossoming and throughout the summer months, resulting in the crop being rather more forward than usual. Severe damage was done by hail storms in some districts during late autumn and winter. Towards the end of the season, wet weather conditions were responsible for a certain amount of wastage in exports, but the general condition of arrivals was on the whole much better than in the previous year. As a result of the low prices realised for the 1936/37 crop, there was a strong tendency to reduce cost of production, and in some cases, groves were not given adequate supplies of water and manures, and insufficient attention was given to pest control.

292. The export crop of 11,415,490 boxes for the season constituted a record for Citrus exports from Palestine, and was 625,380 boxes more than the record crop of the previous year. The increase was due to new areas coming into bearing; the average yield per dunum in old groves was somewhat lower than for 1936/37.

293. The composition of the exported crop as compared with that of the last three seasons is shown hereunder:—

	1934/35	1935/36	1936/37	1937/38
	Boxes	Boxes	Boxes	Boxes
Oranges	6,507,995	4,997,302	9,166,904	9,512,987
Grapefruit	791,661	850,120	1,542,046	1,809,808
Lemons	30,058	46,915	70,792	80,779
Other Citrus	1,132	2,973	10,368	11,916

294. The United Kingdom retained its position as the most important market for Palestine Citrus, taking 62 per cent. of orange exports, 52 per cent. of grapefruit and 17 per cent. of lemons, the total shipment of 6,908,985 boxes to that country, representing 60 per cent.

of the total export, was, however, 701,860 boxes less than in the previous year. Exports to Continental countries amounted to 4,318,416 boxes or 38 per cent. of the total exports, which was an increase of 1,326,411 boxes; Holland. Belgium. Sweden, Norway, Czechoslovakia, Poland, Finland, Rumania and Switzerland being markets in which the expansion of the Citrus trade was most marked; a direct steamer service carried 73.990 boxes to Canada. Exports to Germany and France declined as a result of import restrictions. No exports were made this season to Russia.

CITRUS PRICES. (See Table 2).

295. *Lemons.* Prices paid for fruit on the tree at the beginning of the export season in August were from 4s. 6d. to 5s. per box; there was no demand later for sales of this nature. Prices obtained on the United Kingdom market throughout the season were only fair. In Czechoslovakia and Rumania there was a good demand and fair prices, growers realising a nett profit of 1s. to 1s. 6d. per box.

296. *Grapefruit.* The grapefruit export season commenced on the 1st October; a few consignments from the Emeq and Jordan areas were exported in September after having passed maturity tests. There was practically no demand on the local market, such fruit as was disposed of being sold at 1s. to 1s. 6d. per case on the tree. The first shipments met with a fair demand on the United Kingdom market and were sold at 11s. to 17s. per case. These prices were, however, short-lived and soon dropped below cost of production and marketing. There was an improvement during February due to a reduction in Palestinian exports and prices rose to 17s. 6d.; these were not long-maintained and in the following month prices dropped again to 7s. — 13s. 6d. per case; improving again in April to 7s. 3d. — 16s. 3d. Continental sales on the open market realised nett prices about equivalent to those in the United Kingdom; contract sales are reported as being rather better.

297. *Oranges.* A few small consignments of oranges which were found to be up to the prescribed maturity standards, were passed for export shortly before the commencement of the orange export season on the 20th November. Local sales of oranges during the first part of the season were slow and effected at 2s. to 3s. 6d. per case on the tree. During February and towards the end of the season the demand improved and prices on the tree were considerably higher, rising to 4s. 6d. per case; "Valencia" oranges were sold towards the close of the season at as much as 8s. to 9s. per box on the tree. Early shipments to the United Kingdom fetched poor prices, ranging between 6s. and 12s. 9d. per box. Small or medium fruit gave little or no profit and large fruit sold at a loss. These prices ruled until the middle of January when an upward trend (8s. 6d. to 16s. 3d.) was evidenced, this continuing until the middle of March, when there was a slight drop (7s. to 15s. 6d.) attributed to the wasty condition of arrivals. During the second part of April there was a sharp rise and a record price for the season, 22s. per case for small fruit, was realised. The result of sales on the Continent gave returns about equal to those in the United Kingdom. Very large quantities of cull oranges were placed on the local, Syrian, Lebanese and Trans-Jordan markets. These realised on the whole poor returns to growers, and towards the end of the season a Lebanese plant protection decree seriously affected exports to that country.

298. *Price Summary.* It is generally believed that orange growers this season will have an average nett profit of from 1s. to 2s. per box according to the age of the grove; old groves producing small fruit fetched the higher prices and young groves with larger fruit, the lower ones. Grapefruit gave little or no average nett profit, and lemons returned an average nett profit of 1s. to 1s. 6d. per box to growers.

299. *Transport.* Transport facilities on the whole were better this season than last. The new coastal main road opened a direct route to the Haifa port and large quantities of Citrus fruit were transported over it. Some improvements in the condition of existing feeder roads were made and certain new roads constructed in the Sharon and other districts. There is still need of further road improvement, especially in the district between Majdal and Deir Suneid where during the wet period camels had to be employed for transport purposes. Transport by rail was well organised and the supply of trucks adequate.

300. Stowage and loading at Haifa proceeded satisfactorily and the sailings were regular. At Jaffa and Tel Aviv stowage and loading were not so well-done and sailings were irregular due to weather conditions. The carrying of fruit by lighters to the steamers was frequently done in wet weather without adequate protection. More boats employed in the carriage of Citrus were provided with forced ventilation, but in many instances the usefulness of this system was curtailed owing to improper stacking of the fruit. There were eleven sailings of refrigerated ships as compared with one last season. The ocean freight on these ships was 2s. 6d. per case.

301. The Citrus Transportation and Marketing Committee submitted proposals to Government for the control of fruit-carrying ships.

CITRUS FRUIT INSPECTION.

302. Inspection work proceeded fairly smoothly at all stations throughout the season, although at times shortage of space for inspection at Jaffa and Tel Aviv ports impeded the work. A new inspection point was opened at Ni'ana railway station. Urgent need of shed accommodation was felt at Beer Ya'aqov and Deir Suneid railway stations. At Haifa port reinspection of stored fruit was regularly undertaken and resulted in the elimination of many wasty consignments.

303. A total of 215,189 boxes, or 1.9 per cent. of the total exports, was rejected after inspection, of which 171,011 boxes were repacked under supervision of fruit inspectors, 19,748 boxes being discarded in the process. The main causes for rejection this season shown in percentages of number of boxes rejected were mechanical injuries 35%, waste 13%, irregular sizing 8%, Nuqsans 8% and fruit fly and red scale 5% each.

304. In accordance with the usual practice at the close of the Citrus export season the Rules made under the Citrus Fruit Export Ordinance were examined and revised with the assistance of the Citrus Fruit Committee. Some important additions were recommended, these being embodied in the revised edition of the Rules dated the 20th August, 1937. The principal of these empower the Chief Horticultural Officer and the Chief Fruit Inspector to suspend the picking fruit in water-logged groves, and gives them authority to enforce cleanliness and sanitation in groves and packing houses, and to order the disinfection of packing houses, vehicles, etc. Provision is made in the Rules to reject, without the option of repacking, fruit showing more than 5 per cent. waste and power is given to reinspect fruit awaiting shipment. Maturity and colour standards are defined and made compulsory for the purpose of preventing immature fruit being exported. Restrictions have been placed on the export of certain of the large and small sizes of grapefruit for the purpose of limiting supplies to the more popular "counts", in an effort to improve prices.

CITRUS STATISTICS.

305. At the request of the Citrus Fruit Committee the statistical service rendered to the Citrus trade was extended and now covers the issue of weekly statements of exports, destinations, and dates of sailing and monthly statements of prices, rejections and maturity tests. These are much appreciated by exporters. A summary of the information contained in the consignment notes presented to the Fruit Inspection Service, shows the number of boxes exported in the various count categories for oranges and grapefruit to be as follows:—

ORANGES		GRAPEFRUIT	
Count	Number of boxes exported	Count	Number of boxes exported
120	1,794,271	64	133,845
128	23,343	80	968,978
136	2,922	96	559,001
140	125,098	100	7,166
144	274,683	112	126,979
150	3,403,383	120	2,768
152	474	126	5,752
160	102,127		
180	2,255,243		
200	254		
210	873,276		
226	23		
240	477,086		
250	96		
260	25		
270	6,202		
280	10,141		
288	23,076		
294	93,940		
300	41,236		
336	4,479		
360	959		

CITRUS SURVEY IN ACRE SUB-DISTRICT.

306. The Commission appointed to consider the Chief Horticultural Officers' report on the Citrus groves in the Acre Sub-District, found that insufficiency and bad distribution of water were the principal causes of the unprofitable condition of the groves, and recommended a revision of the water rights at a capital expenditure of approximately LP.11,000 and annual upkeep of LP.300. Government has been unable to implement the Committee's recommendations.

CITRUS COMMITTEES.

307. Ten meetings of the Citrus Fruit Committee were held, at which amendments to the Citrus Fruit Export Rules, Citrus fruit advertising, Citrus statistics, research into Citrus fruit wastage, trade matters and other important subjects were discussed. A report of the Citrus By-Products Committee as to the present condition of the industry in Palestine and suggestions for its development was prepared and forwarded to Government and a number of meetings of the Citrus Transportation and Marketing Committee were attended.

GOVERNMENT RELIEF TO THE CITRUS INDUSTRY.

308. Government has approved of certain reductions in taxation relating to the Citrus industry during the year, including a reduction of the Rural Property Tax on Citrus groves from 825 to 500 mils per dunum, the exemption from customs duties on hoops for Citrus boxes, and a drawback of 2½ mils per box for 1937/38 for wood used in their make-up.

CITRUS FRUIT ADVERTISING.

309. The Citrus fruit advertising programme for 1937/38 was carried out according to plan in the United Kingdom, fifteen Continental countries, India, Canada, Palestine, Syria and Hejaz, at a total expenditure of £P.36,845, with satisfactory results. Films in most of the countries and radio advertising on the Continent were incorporated in the programme for the first time. A statement of the expenditure according to countries is shown in Table 3.

310. The Citrus Fruit Advertisement Ordinance, 1933, was amended so as to enable the fund to be used in future for any approved scheme designed to benefit the Citrus industry, with the particular object of applying it to the financing of a scheme of research and investigation into the problem of wastage of Citrus fruit exported from Palestine. The expenditure on this scheme was estimated at LP.3,167 and, together with that for Citrus fruit advertising, was paid from the fee of 3½ mils collected on each box of Citrus exported.

FRUITS OTHER THAN CITRUS.

DECIDUOUS FRUITS.

311. All kinds of fruit except almonds and apricots produced good crops in most areas. With the exception of apricots, prices were below normal due to an increase in the bearing areas and large importations of fruits from Syria and Lebanon. Deciduous fruit growing continues to interest growers, although the disturbed conditions of the country and adverse weather during the planting season considerably curtailed development. It is estimated that about 2,000 dunums were planted in the plains and a similar area in the mountains.

OLIVES.

312. The olive crop of the country was generally normal although as usual it varied in the different districts. Prices ranged from LP.7 to LP.15 per ton for olives, LP.45-60 for edible oil and LP.25 to LP.40 for oil for soap making. Improved methods of picking olives are being practised on a small scale and the use of combs for reaping is becoming more general. In the mountainous areas distant from the towns, there is a considerable interest in furthering olive plantations, particularly of pickling varieties.

BANANAS.

313. Bananas suffered heavy damage from frost in nearly all areas, causing a failure of the summer crop and the ripening of the bulk of the winter crop within a comparatively short period when prices dropped as low as 10-12 mils per kg. Competition on the local market with bananas from Trans-Jordan is increasing. In Jericho, interest in banana growing is

declining, and many old plantations need replanting. Irrigation water is limited and does not in many cases suffice for normal growth and fruiting. In the coastal areas, in Tiberias, and in Jiftlik Fari'a, in the Nablus Sub-District more interest is evinced; considerable new areas have been planted, and further preparations made in these districts.

VINES.

314. The vine crop was good throughout the country with the exception of the Ramallah Sub-District where frosts in March injured the young growth; berry moth and powdery mildew caused considerable losses. Phylloxera continued to spread, particularly in the Ramallah, Haifa, and Safad vineyards, and efforts were made to induce growers to substitute infected vines with plants grafted on American stocks, of which it is estimated that about 900,000 were raised in private nurseries in addition to those in Government nurseries. Prices for grapes were good at the beginning and end of the season, but only fair in midseason. Imports of about 2,000 tons of grapes were received from Trans-Jordan and 156 tons were exported to Egypt. Wine production at the wine cellars of Rishon le Tsiyon, Zikhron Ya'aqov and Sarona is estimated at 23,300 hectolitres.

HORTICULTURAL EXPERIMENT STATIONS.

315. The nine horticultural stations referred to in last year's report, and of which full details were given in my report for 1935/36, were maintained in good condition and the fruit orchards and nurseries are making satisfactory progress; many of the trees and vines have borne fruit. Annual records of growth of deciduous trees and Citrus were taken for the third year in succession, and observations made as to the affinity of stocks and scions.

316. Detailed guides to all stations are being prepared, and two, those of Sarafand and Farradiya, have already been issued.

317. The following new plant introductions were made during the year :—

Dates : 100 offshoots of Deglet Nur from California.

Loquats : Ahmar and Asfar (early); Akhdar (late) and Mawi (for home use only from the Lebanon.

Citrus : Robertson Navel, Kara, Kinnow and Wilking mandarines from California.

Plums : Mariposa and Elephant Heart (U.S.A. patents) from the U.S.A.

Peaches : Rio Oso Gem (U.S.A. patent); Australian Saucer, Lukens Honey, Early Imperial, Lippiatt's Late Red (nectarine), Waldo and Jewel from the U.S.A.

Berries : Blackberries : Kosmo, Crandall's, Dewberry, Himalaya, Boysenberry and Youngberry from U.S.A.

Raspberries : Cuthbert (red), Golden Queen (yellow) and Monger (black) from U.S.A.

Vines : Queen of the Vineyards (early) from Hungary.

Passion fruit : *Passiflora edulis* selected seeds from Kenya. *Passiflora ligularis* and *P. quadrangularis* were introduced by the Director of Agriculture and Fisheries from Colombia.

318. Observations of interest in the various stations classified according to crops follow :—

Citrus : Distance of planting experiments in Jericho continue to show the highest yields from areas planted 5 metres by 5 metres, followed by 4m. by 4m., those planted 7m. by 7m. and 3m. by 3m. show low yields and inferior development.

Duty of water experiments at the same station continue to show that trees watered every 21 days have more girth and give a higher yield than trees irrigated every 14 days or 10 days.

Root-stock experiments in Jericho show that Shammuti on sweet lime is rather poor, on sour orange quite good, and on rough lemon far superior to both in girth measurement and yields.

In Majdal grapefruit budded on sour orange are of good development but those on sweet lime are observed to bear heavier at an earlier age.

319. *Bananas* : The good results of regularly desuckering banana stools are evidenced by the much higher yields obtained from them as compared with those from which no suckers were removed. The total yield of 150 desuckered plants for the last three seasons was 4,765 kgs. as compared with 2,878 kgs. from 150 unpruned plants. In Farwana investigations as to the effect of irrigation water containing a high percentage of salinity (390 parts per million) continue to show marked ill effects.

320. *Apples* : Studies of root-stocks at Majdal show that Khashabi and *Malus communis* have a better affinity to most varieties of apples and are superior to those budded on Paradise and Doucin. In Nablus, Cox's Orange Pippin and Bramley's Seedling budded on East Malling No. IX have borne good crops, whilst the same varieties on other East Malling stocks, now four years old, have set no fruit. In Farradiya most apple varieties come into leaf earliest when budded on Khashabi, followed by those on *Malus communis* and Paradise in the order given.

321. *Pears* : In Acre the varieties "Pineapple" and "Hood" introduced from the U.S.A. are observed to be very early bloomers, flowering during the end of February to the beginning of March. Pineapple ripened in September producing good fruit; Hood ripened in July and was of excellent taste and flavour. At Farradiya all varieties on *Pyrus communis* have done far better than those on quince. The variety Beurré Giffard is showing very promising results in development and fruiting in all Government horticultural stations.

322. *Plums* : Peach stock seems to be the best stock for most plums grown at Farradiya. In Acre the plum varieties introduced from India show that they flower early but ripen in mid-season. The fruit is watery and of little taste and flavour.

323. *Peaches* : The early flowering, foliation and ripening of the newly-introduced peaches of the Peen-to family growing at Majdal are worthy of mention. The Babcock peach, a cross between Persian and Peen-to, flowered early. The fruit ripening in mid-June, 1937, were of excellent quality with a strawberry-coloured skin and white flesh; C.O. Smith, a similar cross, is also of good quality but not as good as Babcock.

324. *Vines* : Pearl of Czaba as an early variety of table grapes is quite promising. The varieties Flame Tokay and Emperor hang well on the vines for long periods. Two new varieties, Queen Elizabeth and Black de Cot, ripening at the end of July, are heavy producers and give fine bunches of good flavoured grapes. The local variety Einuni is developing well in all horticultural stations and appears distinctly promising.

FRUIT-TREE NURSERIES.

325. Nurseries for fruit trees and vines were maintained as usual at Acre, Farradiya, Majdal, Ein Arrub and Nablus Horticultural Stations. The following table shows the extent of this work :—

	Number raised	Number distributed		Number left over	
		Sold	Free	Replanted	Destroyed
Vines	100,000	70,727	16,940	6,410	5,923
Fruit Trees (mostly deciduous)	106,036	67,050	19,100	13,204	6,682

There were 2,891 applicants, 246,178 vines and 435,041 fruit trees being requisitioned. Grafted olives were in great demand. A proportion only of the number of vines and fruit trees applied for were thus allotted to applicants, except in the case of very small orders. Distribution was arranged on similar lines as for the last two years, but at the close of the planting season 14,367 trees and 19,269 vines were left at the stations uncollected. Private nurseries were also left with large stocks on hand. The reasons for this are believed to be the disturbed conditions in the country, lack of funds to prepare the soil, and adverse climatic conditions in the planting season, viz. very dry weather in December and excessive rain in January and February. Government nurseries are becoming more self-supporting each year in raising root-stocks for vines and trees instead of importing.

HORTICULTURAL FRUIT DEMONSTRATION PLOTS.

326. Work in most of the twenty-nine fruit demonstration plots continued normally notwithstanding the difficulties encountered in reaching many of them. Five were closed down, two in the Beersheba area where conditions have been found unsuitable, and the others at Bir Zeit, Ya'bad and Qalunya, where the work has been completed. Three new ones were started, one in Kinneret—for the study of early varieties of table grapes and root-stocks; another in Ramat David, near Nahalal, for demonstrating standard varieties of apples and pears on various local and East Malling stocks and a third at Jaba' in Jenin Sub-District where rejuvenation of old and neglected olive trees has been undertaken. Generally speaking, a considerable improvement is to be recorded in most plots and interest is being shown by adjoining villagers in the work being done, particularly pruning and spraying.

WORK OF HORTICULTURAL FIELD OFFICERS.

327. The four Horticultural Instructors and the Viticultural Officer were engaged mainly on visits to groves, villages and settlements for the purpose of giving advice and demonstrations on horticultural matters, the upkeep of fruit demonstration plots, the distribution of fruit trees, the inspection of private plant nurseries, the supervision of hill loans, and applications in connection with Rural Property Tax. The unsettled state of the country made extension work very difficult during a large part of the year.

RESEARCH.

CITRUS FRUIT WASTAGE.

328. The scheme of research into Citrus fruit referred to in last year's report was subsequently approved and undertaken by the Agricultural Research Station of the Jewish Agency at Rehovot and the Department of Scientific and Industrial Research, England. The data collected are now being analysed.

STUDY OF STOCKS FOR DECIDUOUS FRUIT TREES.

329. The study of indigenous varieties has been continued; planting material of these has also been sent to East Malling. Studies with a view to finding resistance to nematodes have been commenced with stocks for stone fruits and for resistance to lime with quinces. Vegetative propagation of apples by the stooling and etiolation process has produced many stocks too thick for use. In an effort to overcome this it has been found that the local stock Khashabi will produce two crops of suitable root-stocks in one year, the first being secured in midsummer and the second in winter.

COLD STORAGE OF APPLES.

330. A preliminary trial of introduced varieties grown locally was made. Delicious, Reinette du Canada, Yellow Bellflower, Peasgood Nonsuch and Grand Alexander kept well in ordinary storage for two months and in cold storage (34-37°F.) for four months. Hill fruit generally showed better keeping qualities than that from the plains.

CONTROL OF PLANT NURSERIES.

331. Ninety-three private nurseries were inspected during the year in accordance with the Nursery Rules of the Plant Protection Ordinance. All were approved for registration and subsequently licensed.

R. O. WILLIAMS,
Chief Horticultural Officer.

7th June, 1938.

TABLE 1.

STATEMENT SHOWING SHIPMENTS OF CITRUS FRUIT TO VARIOUS COUNTRIES DURING THE 1937/38 SEASON IN COMPARISON WITH THE 1936/37 SEASON.

DESTINATION	NUMBER OF BOXES SHIPPED				Grand Total 1937/38	Grand Total 1936/37
	Oranges	Grapefruit	Lemons	Others		
United Kingdom	5,952,785	935,259½	13,739	7,202	6,908,985½	7,610,845
Holland	1,022,781	65,659	816	642	1,089,898	604,718½
Belgium	334,809	203,139	1,513	50	539,511	258,485
Sweden	403,164	51,143	40	1,477	455,824	310,857
Poland	354,872	34,952	1,275	483	391,582	307,803
Czechoslovakia	236,284	31,346	12,237	718	280,585	166,212
Norway	246,905	27,769	902	51	275,627	158,327
Rumania	180,605	31,511	34,789	910	247,815	219,768
France	86,677	136,827	5,114	13	228,631	280,786
Germany	157,439	51,419	—	16	208,874	319,332
Finland	103,278	6,666	—	48	109,992	74,716
Denmark	75,726	13,140	21	295	89,182	73,568
Canada	43,825	30,165	—	—	73,990	—
Switzerland	13,067	59,525	2	—	72,594	44,367
Yugoslavia	44,856	3,179	81	—	48,116	51,825
Bulgaria	45,319	882	45	—	46,246	36,006
Latvia	37,124	3,209	272	—	40,605	30,506
Austria	22,723	9,817	2,241	—	34,781	32,164
Hungary	27,932	6,085	1	—	34,018	7,750
Russia	—	—	—	—	—	29,523
Estonia	26,946	521	29	3	27,499	13,490
Lithuania	20,304	1,881	854	7	23,046	20
Egypt	753	7,007	157	—	7,917	6,646
Ceylon	1,925	615	78	—	2,618	467
Syria	1,231	62	—	1	1,294	1,058½
Argentine	900	350	40	—	1,290	300
Greece	1,153	—	—	—	1,153	1,305
Sudan	855	267	10	—	1,132	105
Turkey	37	665	—	—	702	103
India	399	222	5	—	626	1,450
China	140	100	235	—	475	100
Singapore	140	250	—	—	390	205
Malta	250	100	—	—	350	—
Tanganyika	75	65	—	—	140	—
U.S.A.	—	—	110	—	110	160
Hejaz	15	2	4	—	21	598
Java	10	10	—	—	20	—
Tunis	11	1	—	—	12	—
Italy	6	6	—	—	12	—
Transit via Port Said (Destination not given)	67,666	95,992	6,169	—	169,827	146,544
Grand Total up to the 30th June, 1938	9,512,987	1,809,808½	80,779	11,916	11,415,490½	10,790,110

TABLE 2.

MONTHLY PRICES REALISED FOR PALESTINE CITRUS FRUIT IN THE UNITED KINGDOM DURING THE 1937/38 SEASON.

MONTH	ORANGES			GRAPEFRUIT			LEMONS
	Large	Medium	Small	Large	Medium	Small	All Counts
October	—	—	—	all counts	11/-—17/-	—	—
November	—	—	—	9/6—11/6	10/3—11/6	12/3—12/6	—
December	6/-—10/6	6/-—12/-	6/9—12/9	6/3—10/6	6/6—11/6	6/3—11/6	7/9—11/-
January	6/-— 9/9	6/9—11/-	6/-—14/-	6/-—13/-	6/-—12/6	6/6—11/6	9/-—11/6
February	7/6—10/9	8/9—13/-	10/6—16/6	9/-—14/6	9/6—17/6	11/-—17/-	8/-—11/-
March	7/-—10/6	9/6—12/3	9/3—16/3	11/-—	7/-—13/6	8/-—12/9	6/-—11/6
April	7/9—16/9	7/9—20/6	8/3—22/-	—	7/3—16/3	8/9—16/3	11/-—13/3

TABLE 3.

CITRUS FRUIT ADVERTISING, 1937/38 SEASON.

	Amount allocated to advertising for 1937/38			
	General Advertising	Film	Broadcast	Total
	£P.	£P.	£P.	£P.
United Kingdom	12,638	4,500	—	17,138
Palestine	500	50	525	1,075
Syria	150	—	—	150
Hejaz	100	—	—	100
India	500	—	—	500
Canada	898	—	—	898
Holland	1,400	1,100	—	2,500
France	500	500	212	1,212
Rumania	200	550	122	872
Poland	1,100	700	—	1,800
Belgium	927	1,100	140	2,167
Sweden	500	780	—	1,280
Denmark	—	150	—	150
Norway	500	500	220	1,220
Finland	300	220	—	520
Estonia	—	—	151	151
Lithuania	—	—	92	92
Czechoslovakia	400	800	—	1,200
Switzerland	400	600	—	1,000
Hungary	100	200	—	300
Austria	—	95	—	95
Production cost for film	—	1,500	—	1,500
Advertising Citrus by-products	356	—	—	356
Palestine and Syria school film specimen	—	22	—	22
Crown Agents charges	—	—	—	347
Telegrams and sundries	—	—	—	200
Total Expenditure	21,469	13,367	1,462	36,845

Expenditure on Research into Citrus Fruit Wastage £P. 3,167

REPORT OF THE CHIEF PLANT PROTECTION OFFICER

FOR THE

YEAR ENDED 31ST MARCH, 1938.

GENERAL.

332. In the Annual Report for 1936/37 reference was made to the interruption of extension work by the disturbances and how, thereafter, the Plant Protection Service was able to start work again amongst the fellahin. Considerable progress was made until towards the end of 1937 when renewed troubles not only made travelling difficult, but resulted also in a lack of interest among many farmers in anything but their political future.

333. By an unfortunate coincidence the very areas in which the Plant Protection Service was working were those which were in the most disturbed state. In spite of this at first the situation was easier than in 1936. Extension officers now have headquarters in Nazareth in the North and Sarafand in the South, as well as Jerusalem. Close liaison is maintained with the masters of rural schools, horticultural instructors and agricultural inspectors. During the spring and summer of 1937, there was a most marked renewal of interest amongst farmers in pest control. Part of this was undoubtedly due to the inauguration of a system whereby mounted men of the Plant Protection Service visited outlying villages, collected information from the fellahin about any insect or fungus troubles in their crops or trees and brought the news to the advisory officer of their area . These men are so trained that they can demonstrate the use of simple control methods and practice as it were a kind of "first aid". Four of these men are at present at work or under training. The system has proved most useful and will be enlarged in the future if circumstances permit. If peaceful conditions could be established there is no doubt that the fellahin would as a whole be most responsive to plant-protection instruction but while the minds of men are disturbed they cannot pay full attention to any aspect of farming.

The chief pest against which demonstrations of control were given were grape berry moth (*Polychrosis botrana*), grape bud moth (*Theresia ampelophaga*), Mediterranean fruit fly (*Ceratitis capitata*), *Lymantria lapidicola*, *Hoplocampa* sp. and various vegetable pests, and aphis on tobacco, etc.

334. An insecticide firm has established agents at different centres throughout the country and insecticides can now be easily obtained; and at least two cases of co-operative pest control are to be recorded. The appearance of *Puccina antirrhini* caused great havoc in private gardens in Jerusalem and in the vicinity of Tel Aviv. Grape-vines everywhere in the hills suffered heavily from mildew, and at the end of the year *Puccina graminis* was widespread in wheat and barley. Some was present early in the year but the chief trouble at that time was a species of *Septoria* in the barley. This, however, did little or no real damage.

335. Through the kindness of the Secretary General of the Royal Entomological Society of Egypt, it has been possible to send a laboratory assistant for a course in entomological museum work and the Mycological Officer is under training in Cairo at the Mycological Section of the Ministry of Agriculture.

336. Mussel scale survey had to be abandoned for financial reasons but information has been gained showing that this pest is now established over a wide area from Binyamina in Samaria to Jaffa. Infestation does not occur in every grove between these points but these so far mark the northern and southern limits where the pest is to be found.

337. There are signs that the citrus growers are beginning to realise that control measures against this insect must be given and a fair amount of fumigation is expected in the coming season.

338. A large-scale demonstration of winter fumigation was given at Migdal in Galilee against black scale, but was seriously interfered with by exceptional gales and rain. Winter wash spray in the hills for the control of *Ceroplastes rusci* and *Eriosoma lanigerum* was made difficult by the combined effects of continuous rain and the disturbed nature of the country.

However, a break in the weather permitted the spraying of a small fig orchard which should afford the information required as there is promise of a heavy outbreak of *Ceroplastes* this summer. Last year the attack was so feeble that the results of spraying with different kinds of winter wash were inconclusive.

339. An early rain in December followed by nearly three weeks of exceptionally warm weather continued to bring *Syringopais temperatella* out earlier than usual. First this dry weather then the heavy rain and cold checked the growth of the wheat so that the damage done by "Ed Duda" assumed alarming proportions. The cessation of rains and onset of warm spells in March forced the crop on so that at the time of writing an almost complete recovery has been effected. Wheat and barley grew rapidly and overcame the early leaf damage. "Ed Duda" was succeeded by a wide-spread attack of *Puccina graminis* (rust) to an extent greater than has been observed in former years.

RESEARCH.

340. Towards the end of the summer, 1937, the Laboratory Assistant who was working at Tiberias was moved to Jerusalem as his work in the Jordan Valley was for the moment completed, and the study of vegetable pests and Mediterranean fruit fly in the hills was begun. The problem of the last-named insect in Jericho is also under investigation. Its habits in this area and the climate influences, present a very different picture from the upper Jordan Valley.

341. *Eriosoma lanigerum* (woolly aphis) which attacks apples, and *Aphelinus mali* its parasite are also under investigation. The parasites were kindly supplied by the Director of Entomological Research Section, of the Ministry of Agriculture in Cairo. Although the first colonies were weak they made rapid progress in all but one of the places where they were liberated. It remains to be seen whether the severe winter of 1937/38 has adversely affected them.

342. Detailed study is in progress at the Capnodis Station (late Horticultural Station) at Jerusalem. Apart from small areas reserved for the study of vegetable pests and *Eriosoma*, the station is now all planted with stone fruits on myrobolan stock and devoted to the study of Capnodis. A special insectary has been erected at the offices of the Department of Agriculture and Fisheries and the different methods of mechanical and chemical controls can be carried out. Biological study has been continued. Some control experiments of a preliminary nature with ethylene dichloride were done during the summer and interesting information gained. These and kindred experiments will be continued during the coming year. Study of the root-stock problem in connection with Capnodis to which great importance is attached had again to be postponed for lack of funds, and until the financial situation improves it cannot be undertaken. A further small area for Capnodis research is to be established at Tulkarm at the Kadoorie Agricultural School which should serve to give additional information on control methods.

343. In the report for 1936/37, it was stated that arrangements were to be made with the Jewish Agency Agricultural Research Station at Rehovot to take up the study of *Syringopais temperatella*. It was not found to be practicable to do this and the work has been begun at Jerusalem, by the Plant Protection Service.

344. At the Acre laboratory, research continued on *Empoasca lybica*—the leafhopper of potatoes, *Agrotis* sp. and *Prodenia litura* on berseem and alfalfa. A cheap and effective remedy has been demonstrated to the fodder growers and is now becoming a standard practice. The bionomics of *Prodenia litura* are under investigation also the control and seasonal ocurrence of the Mediterranean fruit fly in the Emeq. Codling moth and its control which is the subject of investigation in the coastal plain will also be studied in the Emeq.

345. The final fumigation for testing the effect of a double fumigation of citrus trees against black scale in one year in order to avoid fumigation for four successive years was given in a grove more suitable for the test than that in which the scheme was first tried. This latter grove in spite of being surrounded by unfumigated heavily-infected trees has now reached its third picking season and is still commercially clean. It is doubtful, however, whether it will be so next season owing to the neglect of pest control in the surrounding area. The investigation of the rate and distance of scale infestation was continued.

346. The Plant Protection Committee held four meetings. Subjects discussed were chiefly co-ordination of research and extension work with that of the Hebrew University and the Jewish Agency Agricultural Research Station at Rehovot, and plant quarantine legislation.

QUARANTINE.

347. The Plant Quarantine Branch in the beginning of the year was busy endeavouring to prevent banana smuggling from Syria, but with the deterioration of the political situation it has not been possible to continue preventive work of this nature. Later, apart from routine inspections at the ports, they were concerned to enforce the Nursery Regulations and other sections of the Plant Protection Ordinance, such as ensuring the cutting down of abandoned orange groves. A Plant Inspector has been appointed for the new port at Tel Aviv and offices there secured for him. An office has been allotted to the Plant Inspector in the new customs building at Jaffa port.

LEGISLATION.

348. An order to prohibit the import of carnations and antirrhinum into the country Order (No. 2), 1934, (Amendment) Order (No. 4),1937, published in the Palestine Gazette No. 709 dated 12th August, 1937, has been enacted.

349. I wish gratefully to acknowledge the assistance received from the Imperial Institute of Entomology, Imperial Mycological Institute and the Jewish Agency's Agricultural Research Station at Rehovot for the identification of insects and fungi submitted to them.

E. BALLARD,
Chief Plant Protection Officer.

GENERAL AGRICULTURAL COUNCIL.

REPORT FOR THE YEAR ENDED 31ST MARCH, 1938.

350. During the year under review the membership of the Council consisted of :—

CHAIRMAN :	Mr. M.T. Dawe, O.B.E., F.L.S., Director of Agriculture and Fisheries.
MEMBERS :	Mr. F.R. Mason, Deputy Director of Agriculture and Fisheries. Mr. A.F. Nayton, O.B.E., Registrar of Co-operative Societies. Mr. A.P.S. Clark, M.B.E. Father A. Sacchetti. Herr Gotthilf Wagner, M.B.E. Jamil Eff. Shawa. 'Abd er Rahim Eff. Nabulsi, M.B.E. Sheikh Khalil Eff. el 'Azze. Nicola Eff. Gelat. Sa'id Eff. et Taji. Gabriel Eff. Sa'd. Prof. I.J. Kligler. Mr. H. Viteles. Mr. H. Wolfson. Mr. Y. El'azari-Volcani, M.B.E. Dr. M.B. Hexter. Mr. M. Smilansky, M.B.E.
SECRETARY :	Mr. M. Brown, M.B.E.

351. The membership of the council and the committees reporting thereto was 159. The number of committees was increased to ten by the formation of a Fisheries Committee. All these committees submit the reports and minutes of their meetings to the council for review, endorsement, or recommendations to Government. The membership of these committees is shown below :—

Agricultural Economics and Marketing Committee	18
Agricultural Education Committee	9
Agronomy Committee	14
Agricultural Chemists Committee	8
Animal Husbandry Committee	17
Citrus Fruit Committee	18
Fisheries Committee	17
Horticultural Committee	14
Irrigation Committee	16
Plant Protection Committee	9

EGGS.

352. Government approved the recommendation of the council that the period during which the higher duty of 1 mil per egg is applicable should be extended by two months. (The higher duty is now payable from December to June inclusive). Unfortunately, this higher duty is not yet fully effective, as large imports of eggs continue to enter Palestine free of duty from Syria (out of 93 million eggs imported in 1937, 65 million were imported from Syria).

FERTILIZER ORDINANCE.

353. The Agricultural Chemists Committee devoted three meetings to the preparation of an ordinance to protect purchasers of fertilizers against adulteration. The draft ordinance has been approved by the Secretary of State and was published in the Palestine Gazette on the 10th April, 1938.

ORGANIC MANURE.

354. The council continued its investigations into the possibility of converting refuse into organic manure.

(a) *Conversion of Town Refuse into Manure by the "cell" method.*

It was considered necessary to carry out certain experiments to obtain data to determine whether this method is feasible and economic. Provision was made in the draft estimates for 1938/39 to meet one half of the cost of the scheme of experiments (LP.750) but unfortunately had to be deleted subsequently owing to the financial situation.

(b) *Making of Compost in the larger towns.*

This method is considered to be impracticable of adoption in the big towns owing to the high cost of land, labour, and water supply.

(c) *Sludge Sewage.*

The opinion of the drainage experts in London has been sought through the Crown Agents as to the possibility of interposing sedimentation tanks for the purpose of making manurial sludge at Jaffa and Tel Aviv.

POTATOES.

355. On the recommendation of the General Agricultural Council an order was introduced under the Plant Protection Ordinance requiring that, with effect from 22nd June, 1937, all potatoes imported from Syria, except in sealed bags via certain land routes, must enter Palestine by sea routes only, in order that the potatoes may be properly inspected against potato tuber moth. Government also approved, on the recommendation of the council, that the period during which the higher customs duty of LP.3 per ton is collected on imports should be extended from 15th July to the 31st August. (The higher duty is now payable from 1st of April to 31st August inclusive).

TOMATOES.

356. The duty was increased in March, 1936, from LP.2 to LP.4 per ton. The matter was reviewed by the council who recommended that the higher duty should not be reduced in order that intensive vegetable cultivation may continue to be encouraged. The higher duty is still in force with satisfactory results.

BOVINE TUBERCULOSIS.

357. On the recommendation of the council, a test survey of the incidence of bovine tuberculosis was carried out by the Veterinary Service and a scheme of control and expenditure was prepared. Certain funds have been provisionally allocated in the draft estimates for 1938/39, but had to be deleted subsequently owing to financial stringency.

CITRUS FRUIT COMMITTEE.

358. The Citrus Fruit Committee held ten meetings during the year and continued to assist the Fruit Inspection Service in the examination and revision of the Rules under the Citrus Fruit Export Ordinance. The principal changes are detailed in the report of the Chief Horticultural Officer. Certain resolutions of the committee relating to the importation of citrus fruits into the United Kingdom, which had been endorsed by the General Agricultural Council, were referred to the Secretary of State for consideration. A proposal to call a conference of citrus-exporting countries with a view to reaching agreement as to dates of export in order to obviate glutting of overseas markets, was referred to the Colonial Empire Marketing Board for advice.

PLANT PROTECTION COMMITTEE.

359. The committee devoted some time to the difficult problem of co-operation between different institutions and laboratories engaged in phytopathological research. The problem was thrashed out with the institutions concerned and general agreement was reached on the lines that while the Plant Protection Committee (or any other committee concerned) would deal with general principles, the detailed scheme of research and/or extension and the co-ordination thereof should be worked out by the Heads of the official Services and non-official institutions concerned, any differences of opinion being submitted to the Head of the Department of Agriculture for decision.

FUMIGATION AND SPRAYING OF CITRUS TREES.

360. The General Agricultural Council endorsed the resolution of the Plant Protection Committee to the effect that where it is considered necessary to invoke the Plant Protection Ordinance in order to enforce control of a pest spread over a wide area, as in the case of black scale and mussel scale, fines should be inflicted on those who refuse to obey orders served under this Order. This recommendation has been approved by Government.

PROTECTION OF VEGETABLE CULTIVATION.

361. At four meetings held during the year, the Committee on Agricultural Economics and Marketing considered what encouragement and protection could be given to vegetable growing, and reached the general conclusion that it would be useless further to increase the duties on such vegetables as potatoes, onions, cucumbers and carrots unless the Palestine-Syria Customs Agreement of 1929 is suitably amended.

PRESERVATION OF CUCUMBERS.

362. On the recommendation of the council, a leaflet was prepared on the preservation of cucumbers in brine and was published and broadcast.

CANNING INSTRUCTION.

363. It was originally proposed, on the recommendation of the council, that a canning instructor, should be appointed in 1938/39, but it has proved necessary to defer this project on financial grounds.

CUSTOMS DUTY ON APPLES AND PEARS.

364. The minutes of the meetings of the sub-committee were submitted to the council who took note of the arguments for and against increasing the duties on apples and pears. The council observed that members of the sub-committee had different views on the subject and the council agreed to drop the matter.

AGRICULTURAL EDUCATION COMMITTEE.

365. This committee is still continuing its examination of the problem of the classification of schools and uniformity of syllabi. Arrangements have also been made for the Agricultural Education Committee to advise the Department in regard to rural broadcasting.

FISHERIES COMMITTEE.

366. The new Fisheries Committee has worked well and with commendable enthusiasm. It has formulated several proposals, which have been deferred for the time being, including protection of fisheries, the development of wholesale fish markets, loans for the purchase of boats and fishing gear and provision for practical instruction and scientific research into the problems of the fishing industry.

PREVENTION OF WASTAGE IN CITRUS FRUIT EXPORTED OVERSEAS.

367. A scheme of research has been introduced and the data are being analysed by the Horticultural Service.

ECONOMICS OF THE DAIRY INDUSTRY.

368. The Dairy Committee held eight meetings during 1937/38 and completed its investigations into this subject, and has submitted an interim report which contains three major recommendations, viz:—

(a) the introduction of a quota system on imported butter so as to reduce imports to the extent of about 120 tons annually during the months of May to September;

(b) the introduction of a small tax of about LP.5 per ton on imported butter so as to defray the expenses for a "drink-more-milk" campaign, intended primarily for poor children;

(c) part of the proceeds from the tax to be used for further research work to find ways and means of reducing the cost of milk production.

These proposals are under consideration by Government and meanwhile the committee are still enquiring into the feasibility of a proposal to manufacture locally, condensed milk and dried milk powder.

CITRUS TRANSPORTATION AND MARKETING COMMITTEE.

369. The Citrus Transportation and Marketing Committee held six meetings during the year to reconsider the legislation prescribing minimum standards for ships carrying citrus fruit from Palestine. The committee unanimously recommended the enactment of such legislation after having taken into consideration the views of the shipping companies tendered both in writing and orally. This recommendation and the draft legislation was likewise unanimously endorsed by the General Agricultural Council. The draft legislation is still under consideration by Government and the committee hope that it will be enacted early so that it may take effect during the 1938/39 season.

370. The committee is continuing its exploration of the possibilities of introducing a Citrus Fruit Export Control Board.

M. BROWN,
Secretary,
General Agricultural Council.

31st May, 1938.